Faculty of Medicine

University of Dhaka

EFFECT OF EARLY PHYSIOTHERAPY INTERVENTION FOR PATIENTS WITH PROLAPSED LUMABR INTERVERTIBRAL DISC (PLID)

By

Md. Faruqul Islam

Master of Science in Physiotherapy

Session: 2016-2017

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We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for acceptance of this thesis entitled, **"Effect Of Early Physiotherapy Intervention for Patients with Prolapsed Lumbar Intervertebral Disc (PLID)",** submitted by Md. Faruqul Islam for the partial fulfillment of the requirements for the degree of Master of Science in Physiotherapy.

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Declaration Form

- This work has not previously been accepted in substance for any degree and is not concurrently submitted in candidature for any degree.
- This dissertation is being submitted in partial fulfillment of the requirements for the degree of M.Sc. in Physiotherapy.
- This dissertation is the result of my own independent work/investigation, except where otherwise stated. Other sources are acknowledged by giving explicit references. A Bibliography is appended.
- I confirm that if anything identified in my work that I have done plagiarism or any form of cheating that will directly awarded me fail and I am subject to disciplinary actions of authority.
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Signature:

Name: Md. Faruqul Islam

Date: 2nd November 2018.

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List of abbreviations

BHPI	Bangladesh Health Professions Institute
BMRC	Bangladesh Medical & Research Council
CRP	Centre for the Rehabilitation of the Paralysed
ICF	International Classification of Functioning, Disability and Health
IRB	Institutional Review Board
MDT	Multi Disciplinary Team
NCD	Non- Communicable Diseases
LBP	Low Back pain
DALYs	Disability Adjusted Life Years DALYs
MSK	Musculoskeletal
PLID	Prolapsed Lumber Intra-vertebral Disc
NPRS	Numerical Pain Rating Scale
MRI	Magnetic Resonance Imaging
IRR	Infra Red Radiation
ALL	Anterior Longitudinal Ligament (ALL
PLL	Posterior Longitudinal Ligament
RCT	Randomized Controlled Trail
APTA	American Physical Therapy Association
MDT	Mechanical Diagnosis and Therapy
ROM	Range of Motion
SES	Socio-economic status
ODI	Oswestry Disability Index
SPSS	Statistical Package for Social Science
US	United States
VAS	Visual Analogue Scale
WHO	World Health Organization
YLDs	Years Lived with Disability

ABSTRACT

Introduction: Prolapse lumbar intervertebral disc (PLID) is one of the most common causes of low back pain (LBP) and one of the common musculoskeletal complain in all parts of the world and account for 2 to 3% prevalence rate. Different treatment options are available mostly conservative and surgery. Physiotherapy is one of the important management strategies to mange PLID from acute to chronic stage. It has been shown there are confusion about time to intervention of physiotherapy and found different evidences and arguments. Objective of the study to evaluate the effect of early physiotherapy intervention for patients with Prolapsed Lumber Intervertebral Disc (PLID).

Methodology: Quasi experimental study design was selected for this study. Participants were collected from the physiotherapy department of CRP. The PLID were diagnosed by a group of MDT members and by MRI findings of lumbar spine. Total 60 participants were selected by hospital based random sampling technique and subjects were allocated randomly to the therapist with given treatment protocol. To carry out this study tools are used modified Kuppuswamy's Socio-Economic Status Scale (SES), the numerical pain rating scale and Oswestry disability low back pain index. Data was analyzed by parametric and non parametric statistical scale. **Result:** the finding of the study showed that male and upper lower class people are mostly prominent to PLID. The level of pain in pre test and post test found very significant ($P < 000$) as well as the level of disability status and functional improvements were significant in ODI ($P < 0001$), therefore, study reject null hypothesis and accepted alternative hypothesis. **Conclusion**: Based on the findings it's proved that a specific treatment protocol for patients with acute PLID and early intervention of physiotherapy can have positive effect in reducing pain and improving function outcome. But it is recommended that further randomize control trail study can be done to see the actual effect within different clinical settings.

Key wards: Prolapse Lumbar Intervertebral Disc (PLID), Low Back Pain, Physiotherapy, Exercise therapy

CHAPTER-I: INTRODUCTION

1.1 Background

The prevalence of non-communicable diseases (NCD) in worldwide are increasing significantly, in a recent study on global burden of disease low back pain ranked sixth in terms of overall burden of disease right below stroke and HIV/AIDS and above 291 other conditions like road injury, depression, diabetes and others (Shats, 2015) . The WHO (2011) reported about rapid rise of non-communicable diseases (NCDs) and indicated that one of the major health challenges to global development as its contributed threats to almost 60% of deaths in the world where about 80% occur in the developing countries. Not only that but NCDs responsible for half of annual mortality (51%) and almost half of the burden of disease (41%) (Bleich,et, al 2011). Because of increase in lifestyle related risk factors which from social and economic transition are thought underlying factors. Study indicated Bangladesh has been experiencing an epidemiological change of global disease threatens like many other countries in the field of chronic problem or disabilities (Bleich et, al 2011).

A cross sectional study found that Low Back pain (LBP) is associated with disability in the activities of daily life specifically in task modulated performance, and LBP ranked sixth in disability adjusted life years (DALYs) which increases from 58.2 million to 83.0 from 1990 to 2010, where men are higher prevalence than women which are 10.1% and 8.7% (Hand.L 2014). The prominent figure in LBP due to work-related problem especially in the field of agriculture where the age group between 35 and 65 years and living in regions with high populations, including Asia and North Africa/Middle East (Hand. 2014).

MeucciI et, al (2015) reported in his survey that the prevalence of LBP was 15% to 30% and worldwide estimates of lifetime prevalence for LBP vary from 50% to 85%. Valker et al (2004) found that in developed countries such as the United States of America and Australia, LBP prevalence is 26.4% to 79.2%. Last & Hulbert (2009) stated that the one-year prevalence of LBP in Britain was 49% and in the Nordic countries the one-month prevalence was 35%. Ferllands (2011) found that in Netherland & Belgium, LBP prevalence rates are 30% & 40% was recorded, in Italy 60% of LBP are recognized as occupational disease & in France, LBP recorded as 40% of prevalence. Besides, a cross sectional study on car driver and found that 78% are experienced back pain for at least one day during the past 12 months (Nahar, et, al, 2012).

Low back pain (LBP) and disability have strong relation as several epidemiological studies found and indicated due to musculoskeletal (MSK) complaint in the world and the rate of disability due to MSK disorders is estimated to have increased by 45% from 1990 to 2010 which not only increases in the urban areas but also in the rural population (Stroheim , et al 2014). The most frequently reported risk factor for LBP is heavy physical workload such as lifting, awkward posture, and lifestyle also considered a risk factor of LBP. Apfel et al (2010) stated that LBP is the first common cause of activity limitation, second common cause of doctor's visits and the third common cause of surgical intervention in USA. LBP arising from ergonomic exposures at work is an important cause of disability in East Asia and South Asia (Driscoll. 2014).

There are several causes for LBP among them the PLID (Prolapsed Lumber Intra-vertebral Disc) is the most common findings among the health professionals as explained by Maher,et, al., (2011) that PLID itself is a most common cause of LBP

and a frequent cause of reduction of the mobility of Lumber spine. Lumbar disc herniation is one of the most common spinal degenerative disorders which may lead to low back pain (LBP) and radicular leg pain (Yang. et,al 2015). PLID is a major reason for lower back pain (LBP) and second most common neurological ailment in the United States (Alomari., 2014). Where Americans spend at least $50 billions each year on medical diagnosis and rehabilitations related to lower back (NINDS, 2008). LBP can be categories in 3 spectrum includes - nonspecific low back pain, back pain potentially associated with radiculopathy or spinal stenosis and finally back pain potentially associated with another specific spinal cause (Chou. et,al 2007).

Howard (2017) stated the symptoms of pain and associated feelings can affect the lower back, buttocks, thigh, anal/genital region (via the Perineal nerve), and may radiate into the foot and/or toe where sciatic nerve is the most commonly affected. Besides, limitation of lumbar spine mobility interferes with the attainment of important functional skills and activities of daily living and these functional disabilities have profound effects on individual quality of life. As explained by Akrouf, et,al., (2010) that LBP is the most common cause for functional impairment or chronic disability in United State adults under the age of 65 & the most common cause of activity limitation in persons under the age of 45.

The management of PLID depends on the nature and mechanism of injury and associated pathomechanics as stated by several guideline and evidences (Hill. et,al 2011). Different health professionals are involved in managing PLID in different perspective from conventional treatment to surgical managements. Study found that among the intervention the 90 percent of all prolapsed Intervertebral disc patients

will obtain satisfactory pain relief by conservative measures and this study further noted about its effectiveness but may need long intervention in some cases (Raj. 2008). Slip disc or PLID management usually two strategies have been followed clinically and choice of intervention depends on patients presenting sign and symptoms and associated rate of proportional threats in individuals (NICE Guideline 2009).

Conservative treatment which includes and generally based on an initial period of rest or modification of activities, pharmacotherapy and physical therapy which may involve electrotherapy modalities, manual therapy (a clinical approach utilizing a hands-on technique to treat soft tissues and joint structures. In the journal of American family physician in 2008, suggested the physical therapy has had typically role in the conservative management of disc prolapsed. (Carnes, 2010). Duration may need 6 weeks to 12 weeks of conservative care and it has proven the non surgical management is effective in improving symptom of lumbar disc herniation and emphasis to considered first line of treatment in first 6 weeks (David, S., 2008).

The NICE guidelines (2009) recommend early intervention of physiotherapy which includes and offering a course of manual therapy, such as spinal manipulation, exercise therapy and some electro therapy over a period of up to 12 weeks in early management. There are various studies have been suggested that about the effectiveness of physiotherapy eventually the mechanical physiotherapy is an effective treatment strategy for many patients with lumbar disc prolapsed (Boos N et,al 2000). Nowadays the conservative treatment especially the physiotherapy intervention becomes the first line of management in case of low back pain where these care become more effective and popular in care of patients with prolapsed

lumbar disc. However, there are limited studies to find the effect of early intervention of physiotherapy for patients with PLID.

1.2. Implications of this study / Rational

Low back pain (LBP) is a common musculoskeletal disorder associated with a considerable social and economic burden within the working-age population as stated by in the clinical epidemiology program Ottawa Hospital Research Institute, Canada (Roffey. et al (2010). Despite an unclear aetiology, numerous physical activities are suspected of leading to LBP among the causation the slip disc or Prolapse Intervertebral disc is important to consider. The prevalence of LBP is higher which causes severe pain and often functional limitation and daily life among the all ages group in every country.

The predisposing factor of LBP are several but PLID or slip disc is one of the common phenomenon in our country causes pain on back and often pain radiate down to the leg. Studies have proven there are several causes of LBP and PLID such as lifting object or bending activities and more importantly due to spinal degeneration at the middle ages. People here in our country are tend to hard work manually causes fall in back problems and suffer its consequence devastating health effect both physical and mental in individual and eventually their family as well. It has been shown that people rush to several physician and different professionals or even traditional hear to relief their pain and other suffering which may causes leads to negative health phenomena and negative health consequences in their life.

Evidence unveil that the management of PLID often need multi disciplinary team (MDT) involvement to offer a comprehensive care from initially. Therefore, in the field of PLID management there are several expert and different professionals are involves including doctors, Surgeon and Physiotherapist. As the studies have shown

the physiotherapy is the first line of intervention from beginning of the problem which is cost effective and good clinical outcome while managing patients with PLID in world wide. However, there are several studies have indicated and emphasis about physiotherapy intervention for LBP especially the case of PLID or slip lumbar disc.

The intervention of physiotherapy services ought to introduce at early stage of the back pain. Nevertheless, it is established that physiotherapists have a significance role in pain management especially musculoskeletal pain. Contemporarily it is found that at present, a good number of physiotherapist are directly involving in patients care in different hospitals, clinics and centres around the country results in gradually the services demand are increasing especially in the field of musculoskeletal or orthopaedics. Therefore, it is strongly believing after doing this study not only professionals will be enriching rather general people will be benefited at a whole. For instance, by knowledge the general physician will be more aware about amalgamate and value of the physiotherapy services and referral as well.

On the other hand, the finding of the study will be an influential agent for the patients as well as other health professionals to think about betterment of the patients and its effective and efficient intervention for PLID. Finally, it again hopes result of the study will help and facilitate to the professional and expertise to implement their clinical services to the client, ultimately, the professions can entrust into community people those who badly need this services. Therefore, it is expected by doing this study the health cre professionals can be aware about the effectiveness and importance of physiotherapy intervention in this country. Not only that, but will enhance PLID patients to choose their course of treatment regarding their pain and functional limitation in activities of daily livings (ADLs).

1.3. Objectives

1.3.1 General Objective

To evaluate the effectiveness of early physiotherapy intervention for patients with Prolapse Lumbar Intervertebral Disc (PLID)

1.3.2 Specific Objective:

- To find out the demographic characteristics of participants with prolapse lumbar intervertebral disc (PLID)
- To determine the level of socioeconomic status of participants with prolapse lumbar intervertebral disc (PLID)
- To understand the nature of current pain among the participants prolapse lumbar intervertebral disc (PLID)
- To find the level of disability of participants before physiotherapy intervention and compare after intervention
- To explore the rate of functional limitations among the participants prolapse lumbar intervertebral disc (PLID)
- To find out the relationship between PLID and the level of disability in their activity of daily livings.
- To recommendation of physiotherapy treatment protocol for patients with acute PLID.

1.4. Research Hypothesis

The American Heritage Dictionary defines a hypothesis as, "a tentative explanation for an observation, phenomenon, or scientific problem that can be tested by further investigation." It is hypothesis for the study that tentative or testable answer to the research question by doing the experiment to determine whether or not the hypothesis is right.

1.4.1. Null hypothesis (Ho):

The null hypothesis when a researcher believes there is no relationship between the two variables, or there is a lack of information to state a scientific hypothesis denoted H_0: $\mu d = \mu 0$. Which means the population mean of the differences (μ_d) equals the hypothesized mean of the differences (μ_0).

1.4.2. Alternative hypothesis (Ha):

It is attempt to disprove a null hypothesis, researchers will seek to discover an alternative hypothesis which means the early intervention of physiotherapy for patients with acute PLID have effect on reducing pain and improving function and disabilities denoted H1: $\mu d \neq 0$ (two-tailed), The two-tailed alternative hypothesis (H1) assumes that μd is not equal to zero.

1.5. Operational Definition

Semi skilled: partly skilled or trained but not sufficiently so to performs specialized work and often requiring more training and skill

Profession: A paid occupation, especially one that involves prolonged training and a formal qualification and requiring specialized knowledge and often long and intensive academic preparation

Semi profession: An occupation that requires advanced knowledge and skills but is not widely regarded as a true profession. Where people who are semi-professional are paid for inactivity that they take part in but do not do all the time:

Skilled worker: A skilled worker is any worker who has special skill, training, knowledge, and ability in their work. Where may have attended a college, university or technical school.

Unskilled worker: Worker who does not have any special skill or training

Unemployed: not having a that provides money or the situation of actively looking for employment but not being currently employed.

Upper Class: is a socioeconomic status who have higher levels of disposable income which are state in SEC Kuppaswamy scale total score between 26 – 29.

Upper middle class: middle class consists of well-educated professionals with postgraduate degrees and comfortable incomes which are stated in SEC Kuppaswamy scale total score between 16 – 25.

Lower middle class: Stated in roughly average standard of living. Most have some college education and are white-collar which are stated in SEC Kuppaswamy scale total score between 11 -15.

Upper lower class: occupying the upper part of the lower class where subjet having lowest socioeconomic position in a society which are stated in SEC Kuppaswamy scale total score between 5 – 10.

Lower class: Have limited or no participation in the labor force associated Some high school education, poorly-paid positions which are stated in SEC Kuppaswamy scale total score < 5.

Pain: Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage which is measure by VAS scale.

Physiotherapy management in PLID: Initial assessment in Mackenzie assessment form (attach), follow MDT approach (findings preference of movement), Mobilization, manipulation, stretching, strengthening exercises at back and leg. Electrical modalities for instance IRR (Infra Red Radiation), alongside postural and agronomical advices. (The treatment protocol, Appendix - 01).

CHAPTER- II: LITERATURE REVIEW

Lumbar spine disc herniation or disc prolapse are common phenomena causes people suffering and often physical impairment and certainly disability which has highest prevalence among 30 to 50 years' age group and ratio of male and female are 2:1 (Jordan, et, al 2008). Besides that fact it has found Disc herniation occurs mainly between the fourth and fifth decades of life (mean age of 37 years) but evidences although indicate it may happen at all age group where estimated that 2 to 3% of the population may be affected with prevalence of 4.8% among men over 35 years of age and 2.5% among women over this age (Vialle, et,al 2010). Several findings have shown that Point prevalence of low back pain (LBP) in the general population ranges from 12% to 33%, while its lifetime prevalence may increase to 84% (Kashani, et,al., 2013). Consequentially, a study found the average age of the first attack is 37 and in 76% of cases there is prior history of low back pain within the previous ten years (Carvalho, et, al 2013).

Further, a study indicated that Lumbar intervertebral disc herniation are the most common causes for working-age individuals and patients with a family history of disc disease or are in physically demanding jobs, or who have certain medical Comorbidities such as obesity, are at an increased risk of developing a lumbar disc herniation (.Schroeder, et,al 2015). And it's more common the bottom of the spine at L4–L5 or L5–S1 it is all about (95%) of cases presenting the symptoms clinically (Daoyou, et, al 2013). Study shows the greater risk of disc herniation has been attributed to smoking and exposure to repetitive loads and prolonged vibration (Vialle, et, al 2010). Almost 95% of all PLID occur at levels L4/5 and L5/S1 of the lower lumbar spine (Luchtmann & Firsching, 2016).

The most predisposing factors sedentary type of work with excessive bending and twisting activities leads to disc herniation along with driving and emotional factors like anxiety and stress also have role in PLID (Zahoor et, al 2017). Besides, another study shows vibration, smoking, previous full-term pregnancy, physical inactivity, increase in body mass index (BMI), and interestingly tall stature can be some of the risk factors for disc herniation, not only that but BMI increase and physical activity are also reported to be associated with higher incidence of lumbar disc herniation in the young (Topuz et, al 2013).

It is very essential to understand about spine and its functional biomechanics for the clinician especially for the physiotherapist as long as they are intervening clinical skills and knowledge to eliminate or reduce disabilities causes spinal disorder. Therefore, evidence shows the necessity to knowledge of the normal functional behavior and mechanical properties of the vertebral column is important to understand the pathogenesis of back lesions to identify the clinical manifestations of back pain, and to ensure a rational approach to physical therapy (Denoix 1999). The segmental design of the vertebral column allows adequate motion among the head, trunk, and pelvis; affords protection of the spinal cord; transfers weight forces and bending moments of the upper body to the pelvis; offers a shock absorbing apparatus, where 75% of spinal length is contributed by the vertebral bodies, while 25% of its length is composed of disc material, while approximately 30% of lumbar length is from disc height (Schafer 1987).

Williams & Sambrook (2011) stated that a spinous process projects posteriorly from the posterior portion of the neural arch and transverse process projects laterally from each side of the neural arch. Lee et al (2011) explained that the surfaces of the

vertebral bodies are lined by thin layers of hyaline cartilage and between these layers the intervertebral disc is a thick plate of fibrocartilage that serves as shock absorber (Chaurasia, 2004). Body weight is borne ultimately in the lower back essentially by the L5 disc, sacral base, and sacroiliac joints. The normal motion of the lumbar spine carries 85 degree both in flexion and extension, 10 degree in rotation and 30 degree in lateral bending (Derek Moore, 2017).

However the biomechanics of the lumbar spine is very complex and carries clinical significances in practice for physical therapist, the lumbar spine complex forms of effective load bearing system when load is applied produces stresses to the stiff vertebral body and disc (Richards, 2014). The arthro-kinematics of the movement of lumbar spine as a combination of rotation and translation and force acting on comprehensive force, tensile force, shear force, bending moment and torsional force (Adams, et, al 2002). Literature found that with lumbar flexion, a compressive force is applied to the anterior aspect of the disc and a distractive force is applied to the posterior aspect of the disc. The opposite forces occur with lumbar extension (McKenzie 2003).

The Intervertebral disc is the largest avascular structure in the body which comprises approximately one quarter the length of the vertebral column (Katie lundon & Karen Bolton 2001). Lumbar Intervertebral Discs form the main connection between vertebrae which bear loading during axial compression and allow movement. Each disc consists of the nucleus pulposus, a central but slightly posterior mucoid substance embedded with reticular and collagenous fibers, surrounded by the annulus fibrosus, a fibro cartilaginous lamina (Katie lundon & Karen Bolton 2001). The anterior fibers are strengthened by the powerful anterior longitudinal ligament (ALL). The posterior

longitudinal ligament (PLL) affords only weak midline reinforcement, especially at L4-5 and L5-S1, as it is a narrow structure attached to the annulus where most of the fibers are attached to the cartilage plate (Stephen Kishner,et,al 2017) where the nucleus pulposus contains a hydrated gel–like matter that resists compression and the amount of water in the nucleus varies throughout the day depending on activity (Keith Bridwel & Mary Rodts 2017).

Evidence found that the greater the rise in intradiscal pressure at the L3-L4 segment was created by sitting bent forward at a 20" angle while holding a weight (Nachemson 1996). With age discs increasingly lose the ability to reabsorb fluid and become brittle and flatter; this is why we get shorter as we grow older (Mayfield 2018). Disc itself have very few blood vessels but there is nerve which restricted to the outer lamellae; accompanying its spinal branches called sinuvertebral nerve (Raj, P. Prithvi 2008). The properties and function of the disc is viscoelastic that have creep and relaxation behavior and primary function of the intervertebral disc allows movement between adjacent vertebral bodies, to absorb shock, and to transmit loads through the vertebral column (Keith Bridwel& Mary Rodts 2017). The nucleus acts like ball-bearing when vertebral bodies to roll over the incompressible gel (Mayfield 2018). Disc is mechanical, as they constantly transmit loads arising from body weight and muscle activity through the spinal column during movements or activities in daily life by the properties of the flexibility especially in the lumbar region of the spine (Raj, P. Prithvi 2008).

There are several studies have been extensively focuses on the pathophysiology of intervertebral disc and indicated various factors have been influencing its etiology, including mechanical factors, such as compressive loading, shear stress and vibration,

as well as ageing, genetic, systemic and toxic factors, which can lead to degeneration of the disc through biochemical reactions (Hadjipavlou, et,al 2008). Evidence shows that abnormal mechanical loads contribute and provide a pathway to disc degeneration which associated with work-related cause (Raj, P. Prithvi 2008). Disc degeneration is common for surgeons and radiologists, degeneration might mean the presence of osteophytes and loss of signal intensity on MRI, to a biochemist it may be expressed by changes in the content of proteoglycans or water where a pathologist the disc is dry, with cracks and fissure as reason for this variance is using different tools and hence see different things (Hadjipavlou, et,al 2008).

The age related changes of intervertebral disk undergoes the most serious changes by the third decade of life which are more pronounced with age and moving caudally in the lumbar spine (Kishner 2017). Within the slip disc of lumbar spine disc herniation occur included the L1-L2, L2-L3, and L3-L4 levels are well as L5- S1 where the upper lumbar disc herniation have been reported less than 5% of all disc herniations and at L3-L4 level comprise 70-83% (Kim, 2010). Disc migration take places in the cranio–caudal plane as either cephalic type (supradisc level), caudal type (infradisc level), or ventral type (at disc level) (Huang et al., 2015). According to Raj , (2017) disc lacked and categories in grade 0 is a normal disc, the grade 1 tear leaked contrast material but only into the inner one-third of the annulus, grade 2 tear, nucleus move into the outer two-thirds of the annulus where grade 3 tear has leaked contrast completely through all three zones of the annulus, grade 4 tear is more serious disc spread circumferentially and finally grade 5 tear includes tear that has completely ruptured the outer layers of disc into the epidural space and the result induce a severe inflammatory reaction in the adjacent neural structures and symptoms shows radiculopathy and sciatica

Studies have shown that back pain and disability certainly have strong relation as it's impaired not just a physical health problem rather a multifactor or multi dimensional limitations in daily life. As WHO (2016) has noted disability is thus not just a health problem. It is a complex phenomenon in individuals which reflecting the interaction between features of a person's body and features of the society in which he or she lives and that is a process of impairments, activity limitations, and participation restrictions. Weiner et al (1999) studies and analysis and recommended only well functioning older adults and observed that LBP frequency/intensity were associated with Perceived difficulty in performing important functional tasks, but not with observed physical performance. Several studies have examined the relation with persons with non-specific low back pain (LBP) and disability which is often report impaired ability to perform daily activities. It is often assumed that patients who feel more disabled and thus report more daily life restrictions due to LBP will be those who are less physically active (Lin, et, al 2011).

Nevertheless, the LBP one of the most significant causes is disc herniation in the lumbar region where the evidence found lumbar intervertebral disc degeneration is a common finding in patients with LBP; especially in its herniated form and it can result in severe leg pain and disability Kashani, et,al (2013). In conjunction with the study another study found by Porchet, F et.al (2002) it remarks that there are positive correlation between disability status and PLID or sciatica patients which are determine by the imaging findings and validates both assessment methods. However, evidence dominates on persons with acute or sub acute LBP appear to vary in the levels of physical activity independent of their pain-related disability where persons with chronic back pain with high levels of disability will likely have low levels of physical activity (Lin ,et, l 2011). Disability of occupational-related disc degeneration

gives a serious health problem in individual's life, results in certain impairments and difficulties in activities of daily livings ADL's (Salama et al 2017).

The impact of lumbar disc herniation causes severe pain on back and radiation to down to the nerve root which supplied in specific areas. Typical symptoms of a LDH are low back pain and radicular pain, as well as sensor motor deficits. And the character of pain usually unilateral sharp shooting in nature, pain provoked by standing, bending, twisting or coughing or sneezing and worse with ambulation and at night. In some cases, tingling sensation and numbness seen in the dermatome area of specific nerve **(**Kerkar, 2017**).** Besides, forward flexion (sitting, lifting, going up stairs) exacerbates pain which is key to differentiate from spinal stenosis, or anything that increases intraspinal pressure such as coughing will exacerbate symptoms (Lin ,et, al., 2011).

But generally this disease is characterized by low back pain, unilateral or bilateral sciatica, motor weakness of lower extremities, and deep tendon reflexes abnormalities. Moreover, the symptoms and signs may be observed asymmetrically and sometimes symmetrical (Huang, et al 2015). Besides, the objective examination through Straight Leg Raise (SLR); a neurodynamic test often indicates and confirm the mechanical movement of the neurological tissues as well as their sensitivity to mechanical stress or compression and decreased range of motion are considered by some to be the most important physical signs of disc herniation and the specificity 0.90% and specificity 0.85% to 0.94 (Dutton, M. 2008). Mechanism of discogenic pain still unclear and well unknown how the disc herniation producing pain, often, the pain pathways for discogenic pain are still very controversial in some way. However, recent new research suggests that pain signals from the lower lumbar discs (L4 and L5) are detoured up the sympathetic nerves into

the upper lumbar DRGs—especially at the L2, results in some patients clinically to have L1 or L2 dermatomal pain (groin and anterior thigh pain) if patients have disc herniation at the level of L4 and L5 (Raj, 2008).

Evidence based practice (EBP) it is very essential to have proper assessment and examination of cases individual. In the assessment of diagnostic tests, both the accuracy and therefore, the effect of testing on the outcome are considered. The accuracy of a diagnostic test refers to the ability of the examination to detect and characterize pathologic processes and is typically expressed in terms of sensitivity and specificity of any test (Hwang, 2012). History and physical examination both are very important elements to elicit and confirm the diagnosis and exclude differential diagnosis in lumbar disc herniation or in case of PLID. Medical history and physical examination of the patient, including muscle testing, sensory testing, supine straight leg raise are important part of accurate and crucial for the diagnosis of PLID (Luchtmann & Firsching 2016).

Lumbar intervertebral disc prolapse can be diagnosed clinically by low back pain and its radiation along the course of the sciatic nerve, commonly called sciatica, nature of pain shooting, episodic pain related to movement, and going down the back of the thigh to a varying distance **(**Rahman, et, al 2016). Examination should include a full examination of the pelvis and lower extremities which including a neurologic examination such as sensation, strength, and reflexes, and provocative tests, such as the straight-leg-raise test (Gregory et al 2008). Besides, SLR test can be performed the positive straight leg raising test means is the involvement of nerve root and test is usually positive in all levels of lumbar disc herniation about 94% cases. The SLR

(0,52) is less sensitive than the slump test (0,84), but the specificity of the SLR (0,89) was slightly higher than the slump test (0,83).

In the lumbar disc herniation, the most important physical signs root tension tests and lumbar range of motion, whereas neurologic signs were of secondary importance, many patients have asymptomatic herniations, so, importance of clinical evaluation has increased, and most of the relevant information can be obtained by listening to the patient. (Vucetic et, al 1999). Several studies indicated the MRI be considered as the most appropriate, noninvasive test to confirm the presence of lumbar disc herniation (Albeck,,et,al 2000). Besides these some special test should be done, including X-rays, Bone scan, Magnetic Resonance Imaging (MRI), CT Scan and others (Kernath, 2003) and that it should be the diagnostic study of choice when available (NASS Clinical Guidelines 2012, Diagnosis and Imaging). Study finding the relationship between clinical diagnosis and MRI finding of PLID and concluded PLID is well associates with the MRI findings (Rahman, et al 2016). Besides a study found unveil that only 4 percent of patients with acute lumbar pain with sciatica will have a radiologically detectable lumbar disk herniation and where 99 percent of patients with symptomatic lumbar disk herniation present with sciatica (Jarvik & Deyo 2002).

WHO (2013) report the management of patients with low back pain or discogenic pan requires multiple interventions, an accurate initial diagnosis, close monitoring of potential complications, and appropriate intervention and rehabilitation by trained professionals. It is often need multidimensional based on professional expertise and skills. Studies recommended that there are three options of management protocol for patients with acute PLID, which includes conservative management, nonsurgical invasive treatments and surgical intervention ((Gregory et al 2008). The conservative

option of treatment of lumbar disc herniation may includes treatment modalities such as educational programs, exercise, posture training, spinal manipulation, massage, acupuncture, physical therapy and lumbar support vest are recommended and further that study noted the treatment of first choice is conservative (non-surgical) and aim should be relieving pain, increase function and slow the progression of the illness (Carvalho, et, al 2013).

On the other hand, remaining options of management –nonsurgical invasive includes injections into the epidural space or the herniated disk though the effectiveness and efficacy are questionable and find certain patients in the management of short-term pain from lumbar disk herniation, another one the surgical indication include cauda equine syndrome, epidural abscess, or severe and progressive neuromotor deficits along with patients with no improvement after six weeks of conservative management (Gregory, et al 2008). Besides, study level II evidence indicated that Surgical treatment for motor weakness caused by herniated intervertebral disc resulted in a rapid recovery in the short-term period but there was no difference between groups (p>0.05) who were taking conservative management (Choi, et al., 2013). A systematic review by Scott, et al. (2011) and concluded lumbar disc herniation surgery that on short term (6-24 months) after discectomy 3% to 34% of the patients reported recurrent back/ leg pain. Rather study found that corticosteroids, which showed greater analgesic efficacy in addition to reducing disability (Carvalho LB, et, al 2013).

Nevertheless, the use of routine pharmacological treatment including NSAIDS, muscle relaxants, oral corticosteroids, neuromodulators and analgesics used in management of patients with PLID need to be investigated its effectiveness (NASS

Clinical Guidelines-2012). In the same line of practice in UK it has found that the effectiveness of currently used therapies for sciatica such as non-opioid medication, epidural corticosteroid injections and disc surgery, but also for chemonucleolysis, which is no longer used in the UK NHS (Lewis R, et, al 2011). Not the fact but a study by Gugliotta, et al. (2016) compared with conservative therapy, surgical treatment provided faster relief from back pain symptoms in patients with lumbar disc herniation, but did not show a benefit over conservative treatment in midterm and long-term follow-up.

2.1. Physiotherapy Managements

There are lot of several studies and literature discuss about option of PLID management and supports both conservative management and surgical intervention as viable options for the treatment of radiculopathy caused by lumbar disc herniation (Schoenfeld & Weiner , 2010). However, within the line of conservative management of PLID from the beginning the physiotherapy interventions play a great role to relief pain and improving function and reducing disability. As study found more than 90% of all lumbar disc herniation can be controlled within 6-8 weeks without surgical intervention conservatively by exercises and other interventions (Van Gelder, et, al 2013). Furthermore, evidence shows that the conservative treatment for PLID can be the initial pathway or option of treatment for the majority of cases and which finds a clinically a favorable good outcome, while in contrast early surgery is limited to certain conditions only (Gregory, et, al., 2008).

Conservative treatment PLID consists of bed rest, analgesic and anti-inflammatory agents, physical therapy and certainly in certain physical activities which may apply both child and adult (Dang & Liu., 2010). Physiotherapist can assess, diagnosed the

physical impairment and plan treatment accordingly. Assessment by the primary care practitioner like physiotherapist consists of taking a history documenting the onset of symptoms and any symptomatic progression and other evaluation of several body systems (Schoenfeld & Weiner, 2010). Conservative treatment is physiotherapy which aims to promote physical and psychological health for the patient with prolapse lumbar disc whilst resorption of the disc takes place through physical intervention (Boote, et, al.,2016). Several evidences shows favorable effects of conservative treatment for PLID or LRS and further have been demonstrated with 90% of patients improving within 12 weeks after onset (Alentado ,et al 2014).

2.2. Early Intervention of Physiotherapy

Within the contemporary practice for PLID often need multi-professional involvement and it has shown there is confusion about commencement of physical therapy intervention in early stage of acute PLID. Therefore, the Evidence Based Practice (EBP) guidelines defined acute LBP or acute PLID based on duration of symptoms after onset rather than intensity of symptoms and different guideline have define in deferent way some mentioned pain lasting four weeks or less, and others define as pain lasting six weeks or less (Ladeira, 2011). Evidence also noted the management of lumbar radicular syndrome or PLID is a much debated and contentious area in medical intervention (Reddington, et al., 2017). . But there are several studies have mentioned initially with an acute episode of lumbar radiculopathy or PLID can be managed by a primary care practitioner which also includes physiotherapist and the primary treatments should have included proper clinical judicious effective use of pain medication, physical therapy, short course of medication and may possible use of epidural steroid injections (Schoenfeld. & Weiner , 2010). Richard et al" (2008) describe that among current musculoskeletal

interventions used to treat LBP due to PLID, physiotherapy has the highest evidence of effectiveness in avoiding recurrence and chronic disability.

There is a lack of consensus among the professionals about to starting physical therapy intervention for patients PLID. However, study suggested that the physical therapy can be commence from the beginning of acute condition of PLID and further it is recommended physiotherapy with clinical treatment showed improvement with clinical significant than clinical treatment alone (Luijsterburg, et al., 2008). Besides, other studies also been suggested that patients desire and have improved (Lau, et al., 2008). Further it has noted early physiotherapy intervention is effective in reducing pain and increasing satisfaction for patients with acute PLID in an Accident and Emergency Department. In conjunction evidence shows by the APA clinical guideline (2012) have stated that early physical therapy intervention can help patients to reduce the risk of translation of patients with acute low back pain to patients with chronic symptoms.

Nevertheless, based on the economic prospect and cost effectiveness treatment options versus early access to physical therapy and concluded improved outcomes and decreased costs for patients that received early versus late physical therapy (Rhon, & Fritz 2015). Despite the fact gradually increasing utilization of physical therapy for PLID which is also associated with costs effectiveness recent evidence suggested that early physical therapy (less than 14 days) for acute PLID improved healthcare costs downstream and decreased future healthcare utilization significantly where delayed initiation of physiotherapy for patients with LBP in primary care is associated with increased cost and increased healthcare consumption (Fritz , et al., 2012). Therefore, the referral process should make early and easy way for patients as it carries very

important role in early recovery evidence found that physical therapy referral can be made at the initial office visit as well as early referral to physical therapy can have a substantial impact on cost and long term outcomes (Luchtmann & Firsching 2016).

There are debates about advising patients to take rest while in PLID or slip disc, often physician ask patients to take complete bed rest for a while, now concerning point does the evidences support the concept. As a study found the initial treatment can begin with a short course of rest as indicated for the patient with acute lumbar disc prolapse and radiculopathy in the setting of a lumbar disc herniation (Luchtmann & Firsching 2016). Rather evidence shows consequences negative effect on rest or long-term immobilization or abstention from any physical activity is not uniformly recommended, since bed rest lasting longer than two to four days seems to produce weakness, stiffness, and increased pain in patients with LDH. Rather, a gradual return to normal activities should be pursued. (VanGelder et, al 2013).

In contrast, it has provided by the European guidelines for the management of acute nonspecific low back pain in primary care (2006) mentioned there are broad consensus that bed rest should be discouraged as treatment for low back pain or PLID, in some evidence stated that if bed rest is indicated (because of severity of pain), it should not be advised for more than 2 days where in UK guideline suggest few days as severity of pain but should not be considered a treatment,, in contrast the US clinical guideline stated majority of PLID patients does not need rest. Rather noted negative impact of prolonged bed rest may lead to chronic disability and may impair rehabilitation.

Now day spinal manipulations become very popular manual techniques in western world among the professional's s while treating disc problem patients. Evidence found chiropractors or physical therapists in USA provide the vast majority of spinal manipulation and treat a large proportion of low back pain, and evidence found the spinal manipulation have modest effects on LBP outcomes (Haas, M et,al 2014). Manual therapy or manipulation are widely used for spinal pain or dysfunction to correct and relief pain improve function, and the technique used where patients does not have any control on it while apply. Where applied high-velocity low-amplitude (HVLA) thrust manipulation often results in an audible "pop," as chiropractors use their hands to apply a controlled sudden force to a joint while the body is positioned in a specific way (Yeomans, 2013). Moreover, studies show that spinal manipulation for sciatica or PLID has been found to be related to positive patient and cost outcomes when compared to medical management (McMorland et al 2010). Spinal manipulation one of the most common treatment technique widely used in lumbar spine to relief pain and improve function which could be thrust and nonthrust manipulation intervention for ay types of patients such as acute, sub acute or chronic cases (Delitto, et al., 2012).

There are several studies have noted that the initial manipulation of lumbar spine in PLID patients most likely to benefit from a general lumbo pelvic thrust manipulation (Flynn et al., 2002). Besides another evidence on RCT while comparing the effect of spinal manipulation with strengthening exercise and it has found that patients who receive spinal manipulation had greater reduction in disabilities than others (Childs et, al., 2004). Spinal manipulation is high skilled passive high velocity movements stated this is no more effective than conventional treatment. (Cohen, et al., 2009).

Consequentially, national centre for complimentary and integrated health USA (2017) mentioned that spinal manipulation appears to be a generally safe treatment for low-back pain when performed by a trained and skilled professional. Biomechanical changes caused by spinal manipulation are thought to have physiological consequences by means of their effects on the inflow of sensory information to the central nervous system. Muscle spindle afferents and Golgi tendon organ afferents are stimulated by spinal manipulation. Smaller-diameter sensory nerve fibers are likely activated (Pickar, 2002).

Within the practice of physical therapy, the manual treatment techniques such as joint mobilization is commonly given intervention applied for spinal dysfunction patients such as the McKenzie approach, Maitland mobilization, neural tissue mobilization, Mulligan's mobilization and soft tissue interventions (Thackeray, et al.,2010). So, mobilizations can be describing as a primarily consist of passive movements within physiological or accessory range of motion, can be applied to pain relief and to restore pain-free, functional movements by achieving full range at the joint (Maitland, et al 2005). In mobilization applying force gently and rhythmically on spine to improving mobility in areas of the spine that are restricted (Gross, et al 2010), pressure applied through the thumb or pisiform against the vertebrae in the direction of the movement that is stiff, the mechanism of mobilization can produce significant mechanical and neurophysiologic effect, leads to activation of pain inhibitory pathways that originate in the midbrain and travel down the spinal cord - the descending pathways (Grayson, et al., 2012).

Treatment dosing which are varies there is no dilemma about optimal duration and frequency but maximum literature mentioned 3 cycles of 60 second mobilization

which shown immediate effect (Krouwel, ,et al 2010). Several studies have indicated the effectiveness of mobilization such Spinal mobilization in addition to conventional physical therapy produced significant improvement in leg pain intensity, location of pain and back specific disability in patients with lumbar radiculopathy in lumbar disc prolapsed (Yadav, et al., 2014). Nevertheless, the precaution is made by American physical therapy association (APTA- 2013) reported that based on the education, efficacy, and patient's safety it is not appropriate to apply mobilization by physiotherapy assistant or technician.

The McKenzie method is one of most popular and modern treatment concept based on the for patients with spinal pain and dysfunction which often called mechanical diagnosis and therapy (MTD), developed in 1981 by Robin McKenzie, a physical therapist from New Zealand (Machado, et al., 2006). McKenzie method is a comprehensive approach to manage acute LBP or PLID as it has both an assessment and an intervention which primarily of directional preference exercises, as the concept classify patients as having one of three mechanical syndromes derangement, dysfunction, postural, moreover, directional preference refers to a particular direction of lumbosacral movement or sustained posture that results in centralization or decreased symptoms and returns range of motion to normal(May & Donelson ,2012).

Based on the principle on centralization a systematic review finding that centralization occurred more frequently in acute patients (74%) compared to sub acute (50%) and chronic (40%). Also, centralization was found to be more common in younger patients *(*May, S; Aina, A 2012*).* it follows 3 steps: evaluation, treatment and prevention where evaluation is received by using repeated movements and sustained positions and the choice of exercises or finding the preference of

movement in the McKenzie method is based upon the direction (Machado et al 2010).

The effectiveness and efficacy of McKenzie method in clinically proven a meta analysis study noted McKenzie method is more effective than passive therapy for acute LBP or PLID (Machado, et al., 2006). In lumbar radiculopathy comparing McKenzie treatment with Mobilization and found greater improvements in pain and disability compared to the mobilization group (Schenk et al., 2003). Not only the fact but it is suggested McKenzie method and first-line care (advice, reassurance and time-contingent acetaminophen) or first-line care alone, for 3 weeks. There were no differences in function, disability and global perceived effect (May & Donelson 2012). Here it has noted the assessment component of the McKenzie method may be contraindicated in patients associated with severe spinal instability, trauma, or fracture that may be aggravated by movements of the lumbosacral spine towards the end-ranges of motion (May & Donelson , 2012.

Exercise therapy is one of the important and integral part of physical therapy practice for patients with PLID to relief pain and other discomfort. Xu et al (2012) explained that all therapeutic exercises should be performed slowly and comfortably to avoid injury. Several recent reviews claim a strong evidence of effectiveness for exercise therapy chronic low back pain and moderate evidence in acute low back pain. Studies found specific muscle stretching and exercises. Strengthening, stretching mobilizing and stabilizing exercises for the abdominal, back, pelvic and lower limb muscles, this should be given according to the clinical findings of the patient (Yilmaz E & Dedeli O 2012). EBP guideline suggested to use exercise for the management of patients with non-specific acute, sub-acute, and chronic LBP. 50% of the guidelines recommended

exercise for acute and 100% recommended exercise to manage sub-acute and chronic (Ladeira 2011). For acute PLID mild stretching exercise and other modalities can reduce pain (Schoenfeld A J & Weiner B K 2010), as well as spinal stabilization exercise being used in acute lumbar slip disc (Richardson, et al., 2004). Function of the exercises increasing core muscular strength can assist in supporting the lumbar spine where flexibility of the muscle-tendons and ligaments in the back increases the range of motion and assists with the patient's functional movement (Gordon & Bloxham 2016).

Finally, evidence recommended that programmed exercise combined with clinical treatment for 6 weeks is better than clinical therapy alone in improving sciatica and disability in acute lumbar disc herniation with less than 6 weeks' duration (Carvalho, et al., 2013). More over another recent study also suggested the effect exercise by Francio, er al. (2017) reported that therapeutic exercises in patients suffering from PLID. Even after post surgical change this technique is effective for reduction of radiculopathy.

Electrotherapy which is a part of physical therapy intervention are widely used in acute PLID management in worldwide which includes, heat therapy, mechanical traction and nerve stimulation. Application of surface heat such as a hot pack and infrared light, and deep heat such as ultrasound therapy, short waves, and microwaves has been used in thermotherapy (Ma ,2010). Besides, evidence shows that use of hot compress for 20 minutes (15 sessions over 3 weeks) for individuals with acute or chronic pain due to lumbar disc herniation is recommended (Carvalho, et al., 2013). Consequentially a study suggested LOE 1a concluded that there is contradictory and

insufficient evidence with respect to the use of traction, ultrasound and low-level laser therapy, UST (Wong, et al., 2016).

Besides, more specifically evidence on use of mechanical traction for acute PLID a Systematic review by Reed WR. et al. (2003) about efficacy of traction for patients with low back pain (LBP) with or without radiating found nor beneficiary However, evidence found that therapeutic modalities, including cryotherapy, thermotherapy, ultrasound therapy, electrical stimulation and laser therapy are used specific injuries enables musculoskeletal treatments, therefore, the selection of specific therapeutic modalities is based on their efficacy during a particular phase of rehabilitation and further recommended therapeutic modalities are an adjunct to standard exercise and manual therapy techniques and should not be used in isolation (Logan CA, at al 2017).

Patient education and counseling is very important elements for managing acute PLID to maintain good posture and position while doing daily activities. Studies shows, patient's education that diminishes fear and reinforces a positive outcome appears to have an important effect on functional outcome. Patients education and counseling to resume usual activity was both safe and therapeutic and led to less work disability, less pain, and less health care utilization, not only that but fewer subsequent follow-up visits over the next year. In contrast lack of clear physician communication and lack of clear understanding about disease condition regarding the cause of the patient's LBP may prolong recovery and is a frequent source of patient dissatisfaction (David J. Alvarez et al 2010).

American College of Physicians and the American Pain Society (2012) stated that clinicians should provide patients with evidence-based information on low back pain

with regard to their expected course, advice patients to remain active, and provide information about effective self-care options. Educate patient in home care treatment program and recommends strategies to prevent recurrent problem are very important. Evidence suggested education and counseling strategies have focused on three main approaches includes general education, behavioral education and finally education of patients on the physiology of pain (Delitto et al 2013). It has been evident that there are none single or specific education program is more effective educational program specific to lumbar disc herniation, although there is evidence that presurgical orientation calms the patient and the better educated the patient is, the better their recovery (Carvalho,2013).

CHAPTER-III METHODOLOGY

3.1. Study Design

Quasi experimental pre test and post test design type of quantitative research was selected to conduct this study. Kowalczyk (2017) define pretest-post test design is usually a quasi-experiment where participants are studied before and after the experimental manipulation. To complete this study the researcher chosen a single group of participants and provided pre design intervention protocol during experiment where no control group to compare with the experimental group. The basic premise behind the pretest–posttest design involves obtaining a pretest measure of the outcome to administering some treatment, followed by a posttest on the same measure after treatment.

Pre-test	Treatment	Post-test
O	X	O

.

The pretest- post test design is valuable in describing what occurs after the introduction of the independent variable.

3.2. Study Area and Places

The study was conducted on musculoskeletal conditions both for inpatients and outpatients' units at Centre for the Rehabilitation of the Paralyzed (CRP), Mirpur, Dhaka.

3.4. Study Period

6 months (1st of June 2017 to 30th May 2018)

3.5. Study Population

A population refers to the members of a clearly defined set or class of people, objects or events that are the focus of the investigation. The criteria of study populations were determined from a literature review and the goals for the study. Selection criteria were established gradually, as the assumptions and theoretical base of the study unfold. Therefore this study participants were selected patients with acute PLID attending to CRP-Mirpur and CRP saver Physiotherapy department.

3.6. Sampling Procedure

Hospital Based Random (HBR) sampling techniques was used to collect participants from centre for the rehabilitation of the paralyzed (CRP) physiotherapy department. Subjects have been collected by pre set inclusion and exclusion criteria. Usually patients who are attending at CRP need to screened and diagnosed by the multi disciplinary (MDT) members that includes Doctor, physiotherapist and Occupational therapist. The conformations were done by Straight Leg Raising (SLR) and patients done MRI.

3.6.1. Sampling Technique

Hospital based random sampling than participants were randomly allocate to the individual's therapist by irrespective of their preference and interest or without prior acknowledgment.

3.6.2. Inclusion Criteria

- Patients who are suffering PLID pain from acute less than 4 weeks.
- Both male and female s are included
- Patients age between 20 to 50 years old.
- Patient is being diagnosed PLID by MDT team
- Patients having or done MRI in lumbar region for back problem

3.6.3. Exclusion Criteria

- Patient's having neurological impairments (red flags)
- Patient's having fracture of lumbar spine or spondylolisthesis.
- Patient's having spinal tumour or malignancy or TB in their spine.
- Patient's having lumbar spine surgery.
- Patient's having spinal deformity like scoliosis, kyphosis or spina bifida etc.
- Participants who were unwilling to participate

3.6.4. Sample Size

Sample size for this thesis was 60 participants who attend in physiotherapy department between 1st of February to 31st of March 2018 and diagnosed case of PLID by the MDT team or other professionals.

3.7. Flow Chart of Participant's Selection

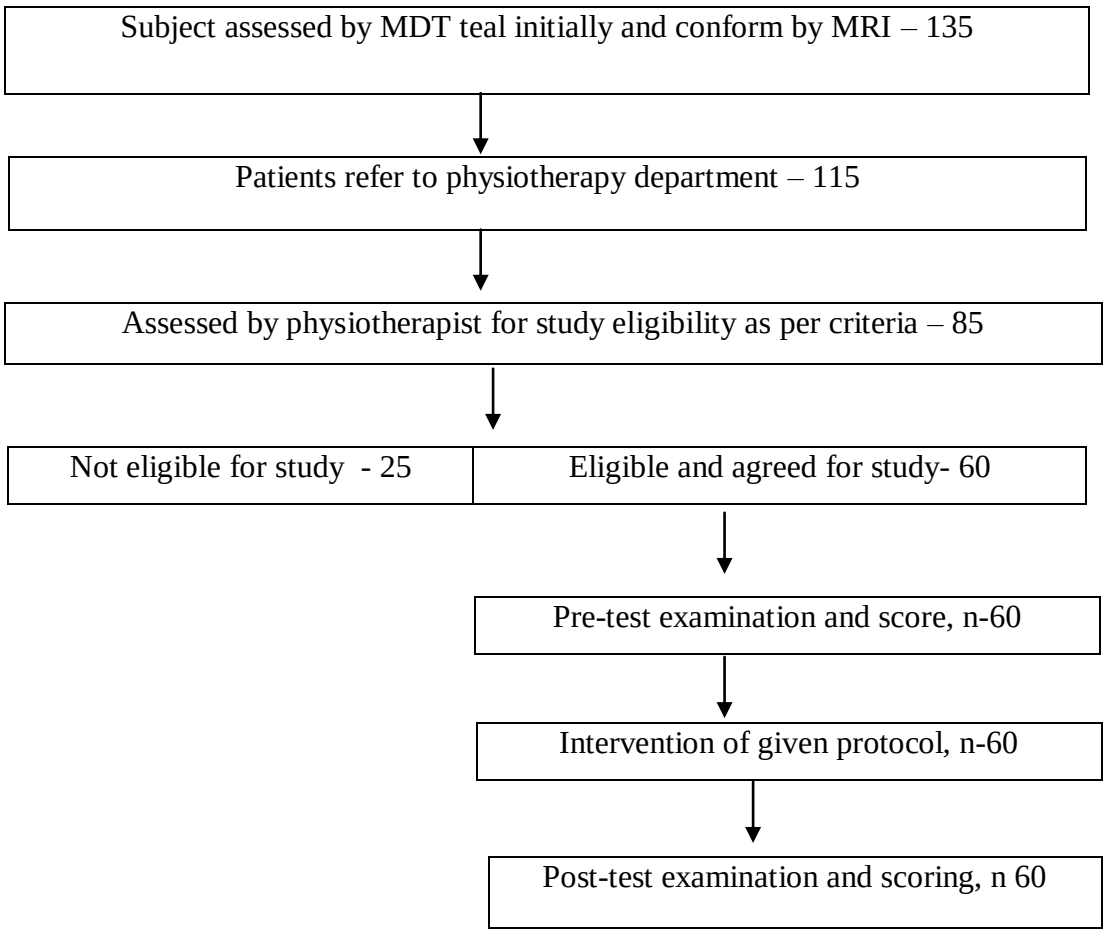

Fig 1: Flow chart of participant's selection and providing intervention protocol

3.8. Method of Data Collection

3.8.1. Data Collection Instruments and Tools

To collects data, the consent form, questionnaire form for socioeconomic status modified Kuppuswamy's socio-economic status scale, revised for 2016, for pain **t**he 0-to-10 Numerical Pain Rating Scale (NPRS) and measuring level of disability the Oswestry Low Back Pain Disability Questionnaire, pen, papers, files, calculator and laptop used as data collection tools.

3.8.2. Questionnaire

Data was collected face to face by using a semi-structured questionnaire form. Questionnaire is a method of collecting information whereby subjects answer a set of questions usually predefined by the researcher. Open ended and close ended, mixed type of questions were selected to make the questionnaire. Questionnaire kept in short that the respondent would finish it but long enough to obtain the desired information and the question should be sequenced in a logical order that they follow one another. Investigator collected data from questionnaire form and setup sequentially.

3.8.3. Scoring for modified Kuppuswamy's socio-economic status scale, revised for 2016.

Socio-economic status (SES) is one of the most important determinants of health of an individual and currently, it is widely studied variable in public health and social science research. SES is an indicator of economic and sociological combined total measure of a person's work experience and of an individual's or family's economic and social position in relation to others, based on income, education, and occupation.

3.8.4. The 0-to-10 Numerical Pain Rating Scale (NPRS):

Measuring Pain Intensity, the 0-to-10 Numerical Rating Scale (NPRS) is a one-dimensional measure of pain intensity in adults. Where it is instructed to tell me the number that best represents your pain in the past (24 hours, seven days), on a 0-to-10 scale, where 0 = No pain and 10 = Pain as intense as you can imagine. The NPRS is a valid and reliable scale to measure pain intense (Hawker, G A 2011). At the end researcher categories pain scale in mild, moderate and severe form to reveal result.

3.8.5. Oswestry Low Back Pain Disability Questionnaire

The Oswestry Disability Index (also known as the Oswestry Low Back Pain Disability Questionnaire) is an extremely important tool that researchers and disability evaluators use to measure a patient's functional disability. The test is considered the ‘gold standard’ of low back functional outcome tools. Questionnaire examines perceived level of disability in 10 everyday activities of daily living

Scoring instructions, for each section the total possible score is 5: if the first statement is marked the section score = 0; if the last statement is marked, it = 5. If all 10 sections are completed the score is calculated as follows: The ODI addresses a broader concept of disability than that directly related to pain intensity

3.8.6. Intervention

Selected subjects were assigned to the responsible therapist randomly by the appointment keeper through patient’s management system (PDMS) where a patient does not have option to choose. The given treatment protocol given by the researcher were followed by the therapist (Protocol attach in appendix 01). The following interventions were followed Mackenzie exercise (preference of movements) 10 repetitions 2 sets with 5 minutes intervention. Mobilization of spine Posterior –

anterior mobilization (PA), 10 rep 3 to 5 sets, Active leg raises exercise and leg stretching exercise 20 rep each one 3 times day, IRR or heat therapy applied . 10 minutes over the lumbar area. Besides, Home exercises (McKenzie principle) and patients education were provided (details of intervention protocol in appendix 01).

3.8.6.1.Data Collection Procedure

Every participants gone through pre assessment and provided intervention according to the given protocol of guideline and than post assessment , following uses of selected measuring tools to collect data. A structured formal questionnaire used to collect data before intervention which are pre set data and after intervention after 6 session of intervention within 6 weeks data were again collected which called post test data. Participants were evaluated by modified Kuppuswamy's socio-economic status scale, revised for 2016, NPRS scale and Oswestry Low Back Pain Disability Questionnaire.

3.8.7. Data Analysis

Data were analyzed by SPSS the entire participant's names were coded to maintain confidentiality. By calculating of the difference between pretest and posttest score the level of improvement and changes were measured. To find out the 'p' value for the significance of the study the examiner used "z" test and willcoxon rank test and compare with before and after among the variables. Both parametric and non parametric type of test used for this study. In this study researcher used same subject design where no control group. Outcomes were measured by collecting the scores of different variables and the scores were considered of nominal and ordinal data.

Estimated predictor

Hypothesis test of mean difference between the pre test and post test experimental group within single groups and also within groups, assuming normal distribution of the parent population and independent variables where variables were quantitative by estimated predictor of non parametric Z test and Wilcoxon sign-ranked test.

In this study z score test for current pain given below-

$$z = \frac{\bar{x} - \mu}{\frac{\sigma}{\sqrt{n}}}$$

$$= \frac{4 - 3.68}{\frac{0.016}{7.74}}$$

$$= 0.08$$

Where,

σ = Population standard deviation

x_i = Numbers given in the data

$\bar{x}\bar{x}$ = Mean of the data

n = Total number of respondents

Wilcoxon sign-ranked test

$$z = \frac{w_s - \frac{n(n+1)}{4}}{\sqrt{\frac{n(n+1)(2n+1)}{24}}}$$

Where,

- n = number of pairs where differences is not 0
- Ws = smallest of absolute values of the sum

Level of Significant

The researcher has used 5% level of significant to test the hypothesis. Calculated z value and compared with standard t value in with appropriate degrees of freedom; the null hypothesis will be rejected when observed z-value is large than the standard Z-

value and alternative hypothesis is accepted. On the other hand, reversed decision has taken when the calculated value of Z is smaller than the standard Z-value. All these decisions are taken with a prefixed level of significance (for this case this is 5%).

In this way the researcher calculate different variables and the level of significance were measure by Z test.

Table 01: Characteristics and level of significance before and after intervention among different variables:

Variables	**Mean ± SD**	**Difference between pre & post test** Level of significance in Z score	
Pre-Current pain	3.68 ± .504	1 ± .016	z = 0.08
Post-Current Pain	2.37 ± .520		
Pre-Pain in Lying	2.83 ± 1.011	1.2 ± .043	z = 0.00
Post-Pain in Lying	1.93 ± .578		
Pre-Pain in Sitting	3.33 ± .705	1.15 ± 0.17	z = 0.00
Post-Pain in Sitting	2.18 ± .537		
Pre-Pain in Standing	3.43 ± .698	1.18 ± 0.19	z = 0.07
Post-Pain in Standing	2.25 ± .508		
Pre-Pain in Walking	3.72 ± .524	1.32 ± .092	z = 0.00
Post-Pain in Walking	2.40 ± .616		
Pre-ODI score	3.90 ± .986	1.35 ± .337	z = 0.04
Post-ODI Score	2.55 ± .649		

3.9. Ethical Consideration

The whole process of this research project was done by following the Bangladesh Medical Research Council (BMRC) guidelines and World Health Organization (WHO) Research guidelines. The proposal of the dissertation including methodology was presented to the Institutional Review Board (IRB) of Bangladesh Health Professions Institute (BHPI) (Appendix- 06). Again before starting data collection, researcher obtained permission (Appendix- 07) from the head of physiotherapy department to access patient data based management and allow full involvement of physiotherapist who have been working in musculoskeletal physiotherapy department, CRP, Savar. The researcher strictly maintained the confidentiality regarding participant's condition and treatments. The researcher obtained consent from each participant to take part in this study. A signed informed consent form (Appendix- 04) was received from each participant. The participants they decline answering any question during the study and were free to withdraw their consent and terminate participation at any time. Withdrawal of participation from the study did not affect their treatment in the physiotherapy department and they still had the chance to receive same facilities. Every subject had the opportunity to discuss their problems with the senior authority or administration of CRP and had any questioned answer to their satisfaction.

3.10. Informed Consent

Before conducting research with the respondents, it is necessary to gain consent form from the subject or participant. A participant has rights to know about their participatory effectiveness. In this study, participants were given an information sheet explaining the aims and purpose of the study and the methods of data collection they may be required to participate in. All were personally spoken to and given an opportunity to ask questions prior to signing a consent form. They were also informed that they were free to withdraw from the study at any time and in the event of this, any provide information would be destroyed at their request. It should be assured the participants that their name or address would not be used. The information of the subjects might be published in any normal presentation or seminar but they would not be identified. Subjects were also informed that all of the information given by them should be maintained confidentiality, the study might not have direct effect on them but the members of physiotherapy profession and other clinical related profession may be benefited from the study in future (attach in appendix 04,5).

CHAPTER- 1V RESULTS

The aim of the research was to find out the outcome of physiotherapy treatment in patient with prolapsed Lumber inter vertebral disc. In this study 60 subjects were selected by convenience sampling.

4.1. Socio demographic characteristics of the participants:

4.1.1. Table 2. Rrespondents' mean age and SD

Among the 60 participants where mean age were 46 and standard deviation (SD) were ± 12.82. Here it was shown among the respondents the minimum age range were 20 years and maximum 57 years.

Mean age	Standard deviation
46 years	12.82

4.1. 2. Distribution of respondents by Sex

Among 60 PLID patients were included as sample of the study, among them almost 58% (n=35) were male and about 42% (n=25) were female.

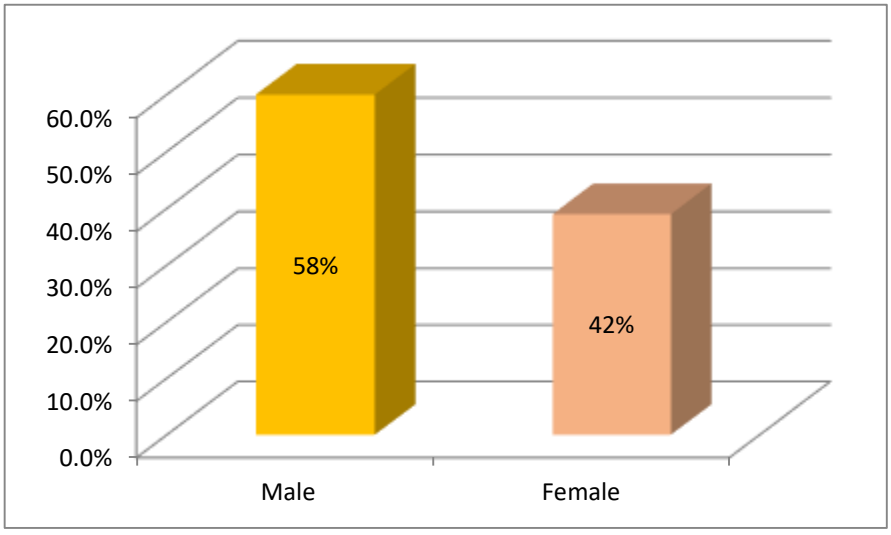

Fig-2: Involvement of Sex

4.1. 3. Distribution of respondents by occupations

The study was conducted on 60 participants of PLID patients. Among them 5% (n=3) were unemployed, 28.3% (n=17) were unskilled, 25% (n=15) were semi-skilled worker, 10% (n=6) were skilled worker, 21.7% (n=13) were clerk shop, 5% (n=3) were semiprofessional and 5% (n=3) were from professional.

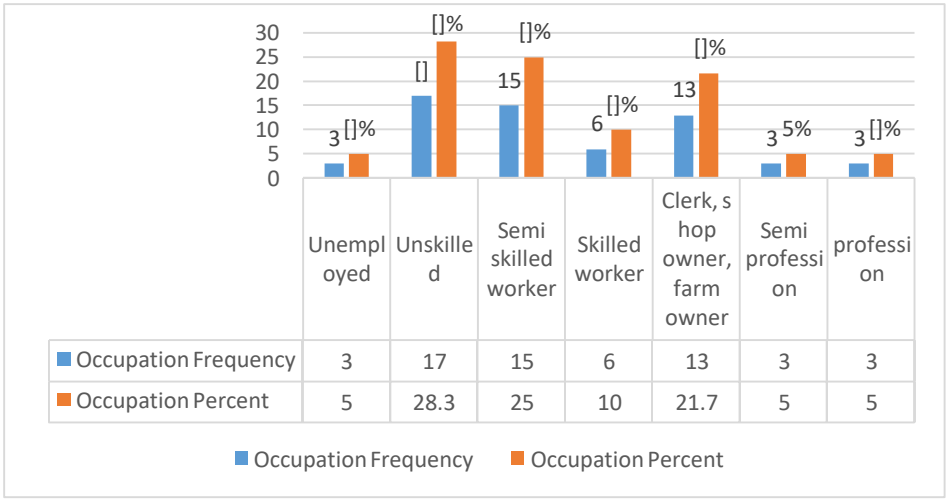

Fig-3: Status of occupation

4.1. 4. Distribution of respondents by Educational Qualifications

The study was conducted on 60 participants of PLID patients. Among them 1.7% were illiterate, 13.3% were primary or literate, 18.3% were middle school completion, 16.7% were high school certificate, 21.7% were intermediate, 21.7% were graduate and 3.3% were from post-graduate.

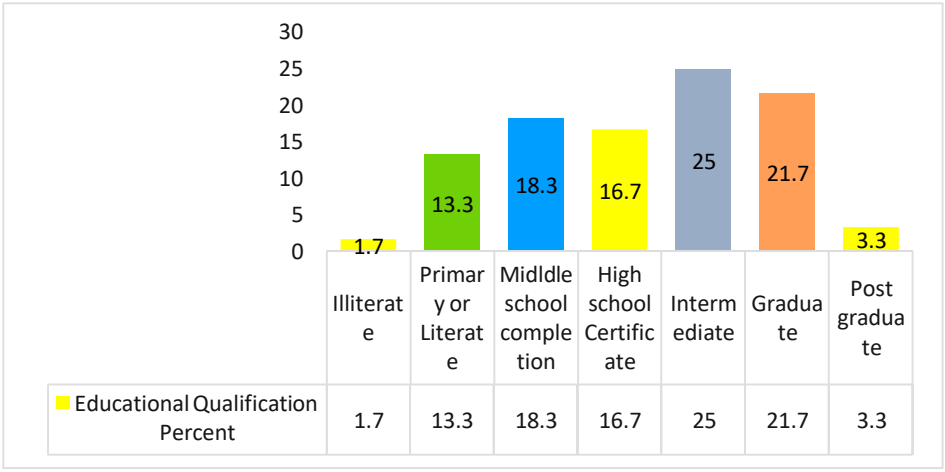

Fig-4: Educational Qualifications among the respondents

4.1.5. Distribution of participants by Socioeconomic Status (SES)

According to socioeconomic (modified Kuppuswamy's socio-economic status) scale within the total 60 patients with PLID among them maximum 45% (n=27) were lower middle class following 43.3% (n=26) were upper lower class, and 11.7% (n=7) were upper classes.

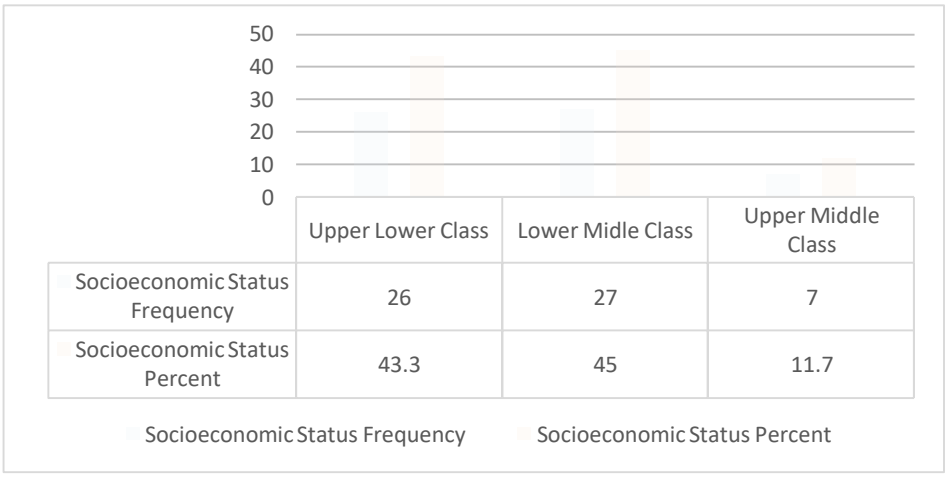

Fig- 5: Socioeconomic Status

4.2. Current Pain

4.2.1. Table 3. Pair Z-test (pre-test and post-test) in Numeric Pain Rating scale (NPRS)

Serial No.	Variables	Z	df	Sig. (2-tailed)
Pair 1	Current Pain	16.341	59	.000*
Pair 2	Pain in Lying	8.531	59	.000*
Pair 3	Pain in Sitting	13.012	59	.000*
Pair 4	Pain in Standing	13.554	59	.000*
Pair 5	Pain in Walking	15.081	59	.000*

*Note – Level of significant p=0.05

This current table shows variables of pain in Numeric Pain Rating Scale (NPRS) in different posture and their pre test and post test significances. Results found that were highly significant within before (pre) & after (post) treatment in different position and that proved that treatment with time were significant, p<.000.

4.2.2. Current Pain status of before treatment by NPRS

This figure show that consecutively from mild to severe pain before treatment and that was rate of current pain gradually 1.7% (n=1) were suffering mild pain, 28.3% (n=17) were suffering moderate pain and maximum were 70% (n=42) were suffering severe pain. This also shows that mild pain frequency was only 1 but severe pain frequency was 42 in current pain episode of before treatment.

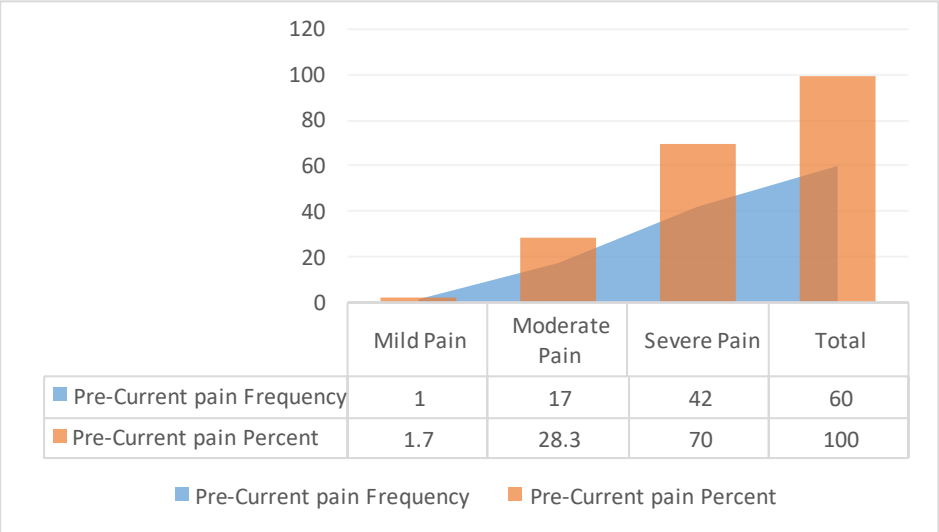

Fig-6: Current Pain status of before treatment

4.2.3. Current Pain status of after treatment by NPRS

Very interestingly the figure shows in reverse to the current pain before treatment and their consecutively. It has reveals among 60 participants of PLID patient's after treatment the rate of current pain maximum 65% (n=39) were suffering only mild pain following gradually 33.3% (n=20) were suffering moderate pain and only 1% (n=1) were suffering severe pain. Not only that but it has also shows also shows that mild pain frequency was improved from 1 to 39 but severe pain frequency was decreased from 42 to 1 in current pain episode of after treatment.

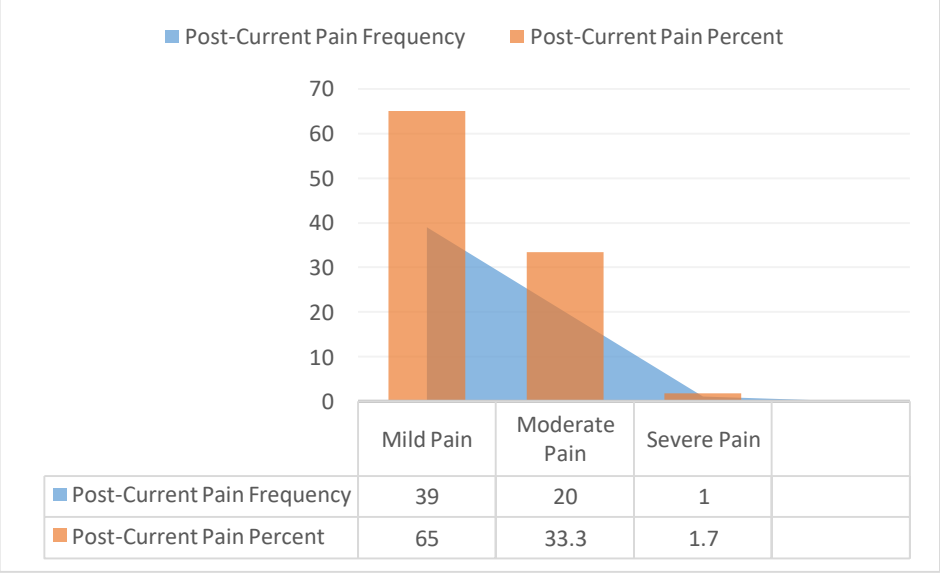

Fig-7: Current Pain status of after treatment

4.2.4. Table -3: Rank and test statistics of current pain within post-test and pre-test

Post-Current Pain - Pre-Current pain	N	Mean rank	Sum of Ranks	Test statistics (Wilcoxon signed-rank test)	
				Based on negative ranks Z	p
Negative Ranks	0	.00	.00	- 6.667	.000
Positive Ranks	55	28.00	1540.00		
Ties	5				
Total	60				

This table described the grade on the comparison of participants before treatment (pre) and after treatment (post) current pain where participants have decreased current pain after application of intervention. In addition, it also showed that none participants did not have current pain deficit score after application of intervention. Where only (5) participants had equal amount of current pain after treatment. However, examining the final test statistics portion of table by Wilcoxon signed-rank test it was discovered that application of intervention were a statistically significant change in current pain among individuals with PLID (Z= -6.667, p= 0.000).

4.3.5. Pain in lying status of before treatment by NPRS

This figure describe before treatment the rate of pain in lying gradually 10 % (n=6) were no pain, 30% (n=18) were suffering mild pain, 26.7% (n=16) were suffering moderate pain & 33.3% (n=20) were suffering severe pain. Also shows that before treatment there was 6-persons has no pain, 18 persons has suffering mild pain, 16 persons has suffering moderate pain and 20 persons has suffering severe pain that was high rate of them.

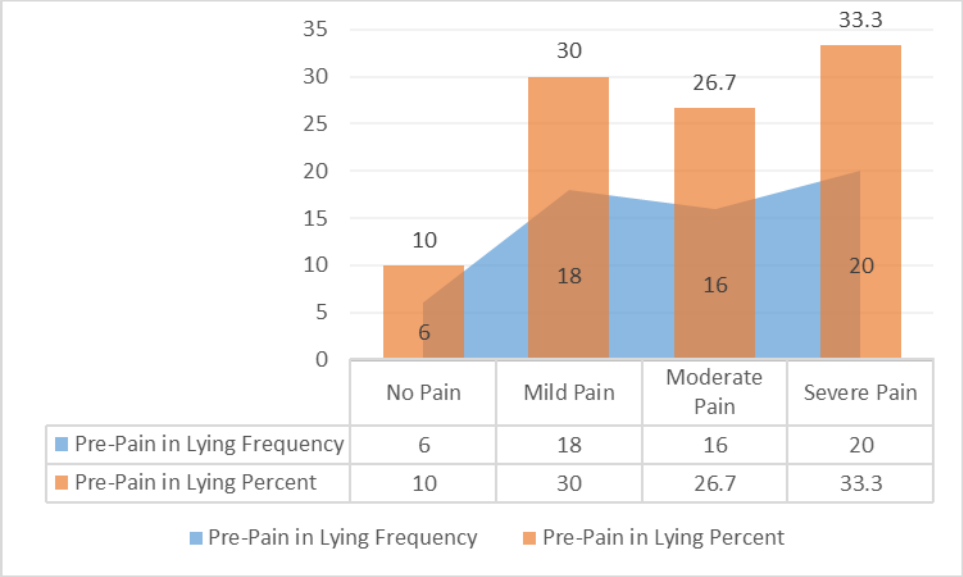

Fig-8: Pain in lying status of before treatment

4.3.6. Pain in lying status of after treatment by NPRS

This figure describe in details about pain in lying after treatment, gradually 18.3 % (n=11) were no pain, 71.7% (n=43) were suffering mild pain, 8.3% (n=5) were suffering moderate pain & 1.7% (n=1) were suffering severe pain. This also shows that after treatment there was 11 persons has no pain that was improved than before treatment, 43 persons has suffering mild pain that was too much increased than before treatment, 5 persons has suffering moderate pain and 1 person has suffering severe pain that means both stage of pain were gradually decrease by after treatment.

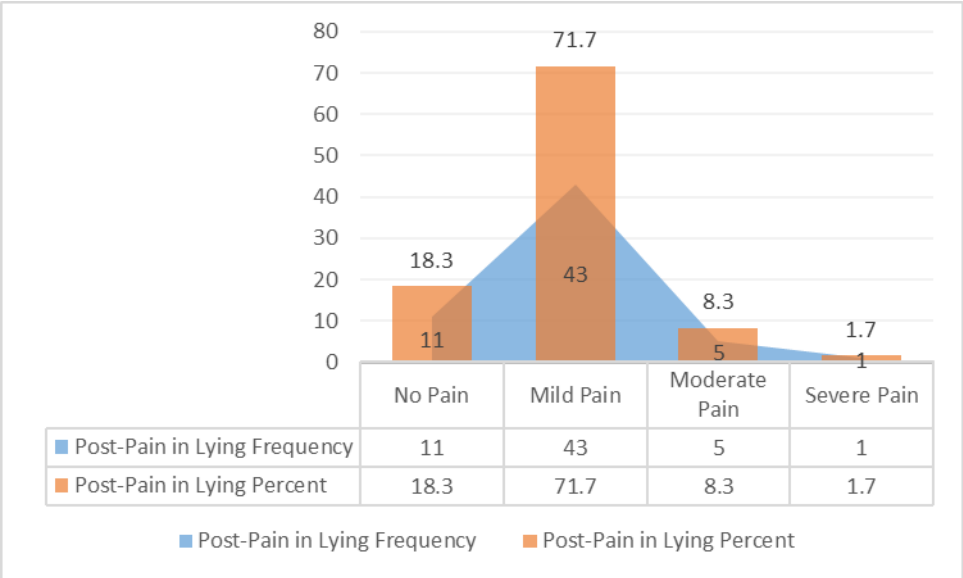

Fig-9: Pain in lying status of after treatment

4.3.7. Table 4: Rank and test statistics of Pain in lying within post and pre-test

Pre-Pain in Lying - Post-Pain in Lying	N	Mean rank	Sum of Ranks	Test statistics (Wilcoxon signed-rank test)	
				Based on negative ranks Z	p
Negative Ranks	0	.00	.00	-5.473	.000
Positive Ranks	37	19.00	703.00		
Ties	23				
Total	60				

This table describe Wilcoxon signed-rank test guide shows the grade on the comparison of participant's before intervention (pre) and after intervention (post) Pain in lying position. In this table showed that maximum (37) respondent have decreased level of Pain in lying position after application of interventions. In addition, it found none have any pain in lying deficit score after application of intervention, where (23) participants had equal amount of Pain in lying after treatment. By examining the final test statistics portion of table by Wilcoxon signed-rank test it was discovered that application of intervention for statistically significant change in Pain in lying among individuals with PLID (Z= -5.473, p= 0.000).

5.3.8. Pain in sitting status of before treatment by NPRS

This figure explain about before treatment the rate of pain in sitting gradually 13.3% (n=8) were suffering mild pain, 40% (n=24) were suffering moderate pain & 46.7% (n=28) were suffering severe pain. This figure also shows that before treatment there was 8 persons has suffering mild pain that was too much lower than moderate and severe pain, by the way 24 persons was suffering moderate pain and 28 persons was suffering severe pain.

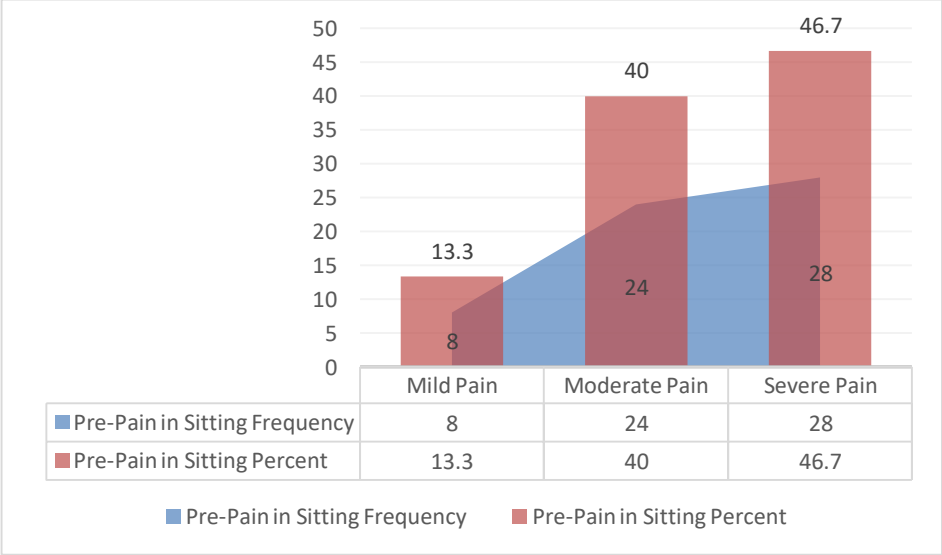

Fig-10: Pain in sitting status of before treatment

4.3.9. Pain in sitting status of after treatment by NPRS

This figure describe show that after treatment the rate of pain in sitting gradually 5% (n=3) were no pain, 73.3% (n=44) were suffering mild pain, 20% (n=12) were suffering moderate pain & 1.7% (n=1) were suffering severe pain. Besides it also shows that after treatment there was 3 persons has no pain that was improved than before treatment, 44 persons has suffering mild pain that was too much increased than before treatment, 5 persons has suffering moderate pain and 1 person has suffering severe pain that means both stage of pain were gradually decrease by after treatment.

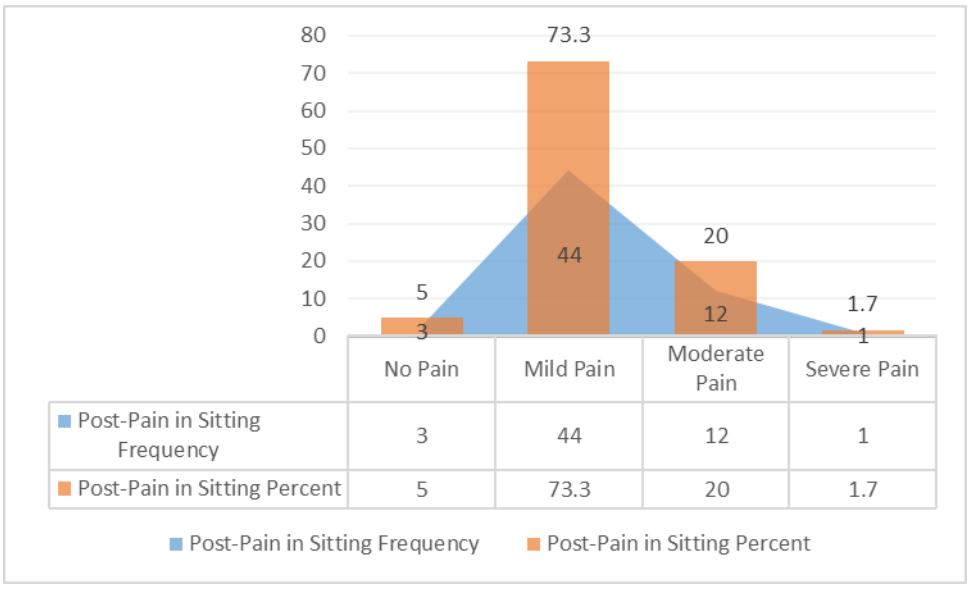

Fig- 11: Pain in sitting status of after treatment

4.3.10. Table 5: Rank and test statistics of Pain in sitting within post and pre-test

Pre-Pain in Sitting - Post-Pain in Sitting	N	Mean rank	Sum of Ranks	Test statistics (Wilcoxon signed-rank test)	
				Based on negative ranks Z	p
Negative Ranks	0	.00	.00	-6.385	.000
Positive Ranks	50	25.00	1270.00		
Ties	10				
Total	60				

This current table described the grade on the comparison of participant's before (pre) and after (post) Pain in sitting. The table's legend showed that any participants have decreased Pain in sitting after application of intervention. In addition, any participants did not have Pain in sitting deficit score after application of intervention. Besides, 10 participants had equal amount of Pain in sitting after treatment. By examining the final test statistics portion of table by Wilcoxon signed-rank test it was discovered that application of intervention were statistically significant change in Pain in sitting among individuals with PLID (Z= -6.385, p= 0.000).

4.3.11. Pain in Standing status of before treatment by NPRS

This current figure show that before treatment the rate of pain in standing gradually 11.7% (n=7) were suffering mild pain, 33.3% (n=20) were suffering moderate pain & 55% (n=33) were suffering severe pain. Besides, it also explain that before treatment there was 7 persons has suffering mild pain that was too much lower than moderate and severe pain, on the other hand 20 persons was suffering moderate pain and 33 persons was suffering severe pain.

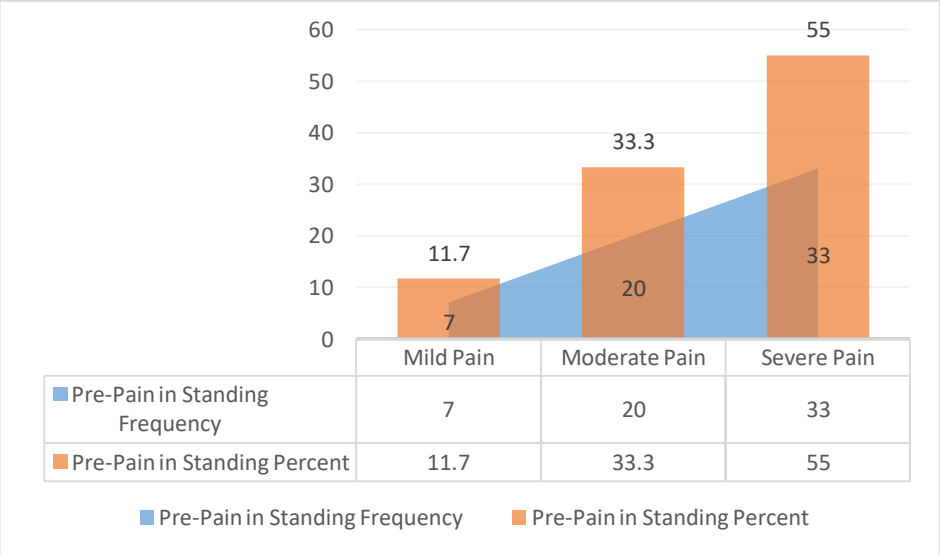

Fig-12: Pain in standing status of before treatment

5.3.12. Pain in standing status of after treatment by NPRS

This figure explain in details after treatment the rate of pain in sitting gradually 1.7% (n=1) were no pain, 73.3% (n=44) were suffering mild pain, 23.3% (n=14) were suffering moderate pain & 1.7% (n=1) were suffering severe pain. It has also shows that after treatment there was 1 persons has no pain that was improved than before treatment, 44 persons has suffering mild pain that was too much increased than before treatment, 14 persons has suffering moderate pain and only 1 person has suffering severe pain that means both stage of pain were progressively reduction by after treatment.

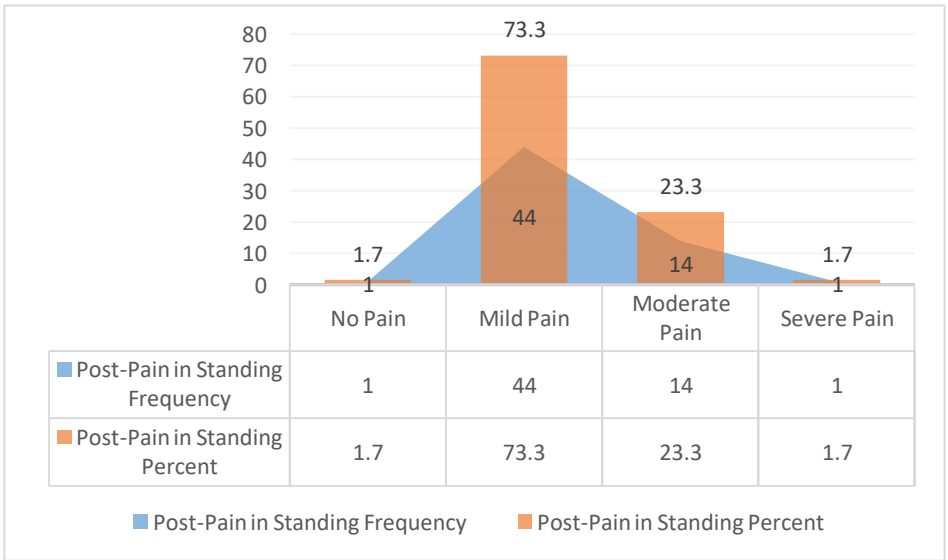

Fig-13: Pain in standing status of after treatment

4.3.13. Table 6: Rank and test statistics of Pain in standing within post and pre-test

Pre-Pain in Standing - Post-Pain in Standing	N	Mean rank	Sum of Ranks	Test statistics (Wilcoxon signed-rank test)	
				Based on negative ranks Z	P
Negative Ranks	0	.00	.00	-6.441	.000
Positive Ranks	51	26.00	1326.00		
Ties	9				
Total	60				

This table describe the grade on the comparison of participant's before (pre) and after (post) Pain in standing position. The table's legend showed that any participants have decreased Pain in standing after application of intervention. In addition, any participants did not have Pain in standing deficit score after application of intervention. Besides, 9 participants had equal amount of Pain in standing after treatment. By examining the final test statistics portion of table by Wilcoxon signed-rank test unveil that application of intervention were statistically significant change in Pain in standing among individuals with PLID (Z= -6.441, p= 0.000).

4.3.14. Pain in walking status of before treatment by NPRS

Among them 60 participants of PLID patient's & fig-14 show that before treatment the rate of pain in standing gradually 3.3% (n=2) were suffering mild pain, 21.7% (n=13) were suffering moderate pain & 75% (n=45) were suffering severe pain. Fig-13 also shows that before treatment there was 2 persons has suffering mild pain that was too much lower than moderate and severe pain, alternatively 13 persons was suffering moderate pain and 45 persons was suffering severe pain.

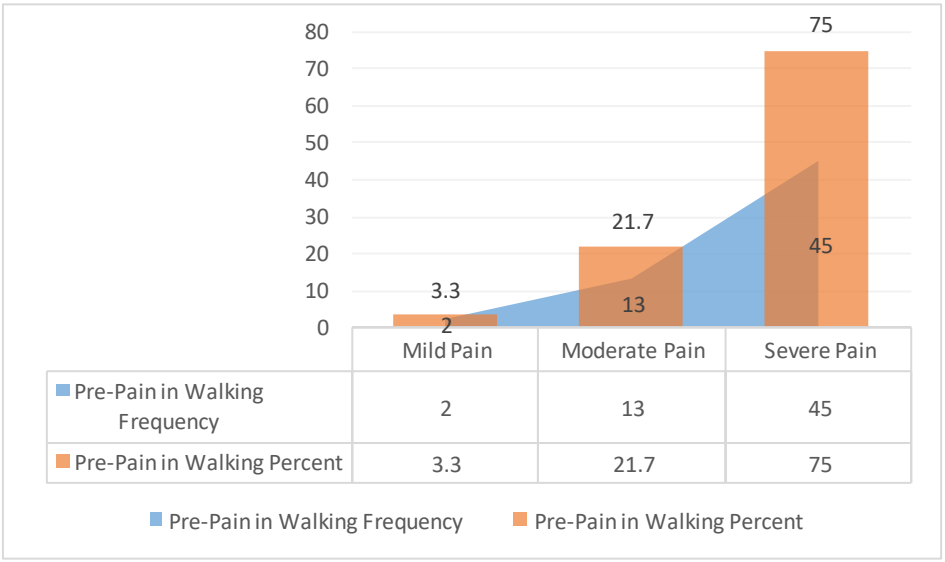

Fig-14: Pain in walking status of before treatment

4.3.15. Pain in walking status of after treatment by NPRS

This figure shows that after treatment the rate of pain in sitting gradually 3.3% (n=2) were no pain, 56.7% (n=34) were suffering mild pain, 36.7% (n=22) were suffering moderate pain & 3.3% (n=2) were suffering severe pain. Besides it also shows that after treatment there was 2 persons has no pain that was improved than before treatment, 34 persons has suffering mild pain that was too much increased than before treatment, but 22 persons has suffering moderate pain and 2 persons has suffering severe pain that means both stage of pain were with time reduction by after treatment.

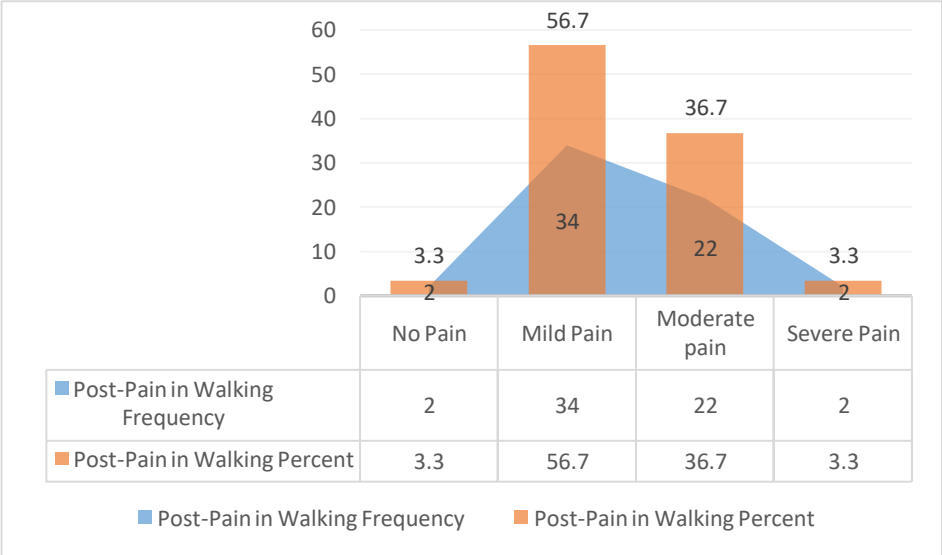

Fig-15: Pain in walking status of after treatment

4.3.16. Table 7: Rank and test statistics of Pain in walking within post and pre-test

Pre-Pain in Walking - Post-Pain in Walking	N	Mean rank	Sum of Ranks	Test statistics (Wilcoxon signed-rank test)	
				Based on negative ranks Z	p
Negative Ranks	0	.00	.00	-6.669	.000
Positive Ranks	55	28.00	1540.00		
Ties	5				
Total	60				

This table explain the grade on the comparison of participant's before (pre) and after (post) Pain in walking. The table's legend showed that any participants have decreased Pain in walking after application of intervention. In addition, any participants did not have Pain in walking deficit score after application of intervention. Besides, 5 participants had equal amount of Pain in walking after treatment. By examining the final test statistics portion of table by Wilcoxon signed-rank test found intervention were statistically significant change in Pain in walking among individuals with PLID (Z= -6.669, p= 0.000).

4.4. Table 8: The Oswestry Disability Index (ODI) for Low Back Pain

Serial No.	**Variables**	**95% Confidence Interval of the Difference**		**Z**	**df**	**Sig. (2-tailed)**
		Lower	Upper			
Pair 1	Disability score/Level	1.144	1.556	13.090	59	p = 0.04

*Note – Level of significant p=0.05

This table explain score of all variables of Oswestry Disability Index (ODI) were highly significant within before (pre) & after (post) treatment. So, it was proved that treatment with time were significant, p<.000.

4.4.1. The level of Disability rate of before treatment by ODI

This figure describe in details patient's the rate of disability before treatment where same 28.3% (n=17) were severe disability & moderate disability. In contrast, maximum 35% (n=21) were bed bound or exaggerating their symptoms & 8.3% (n=5) were distress with moderate disability.

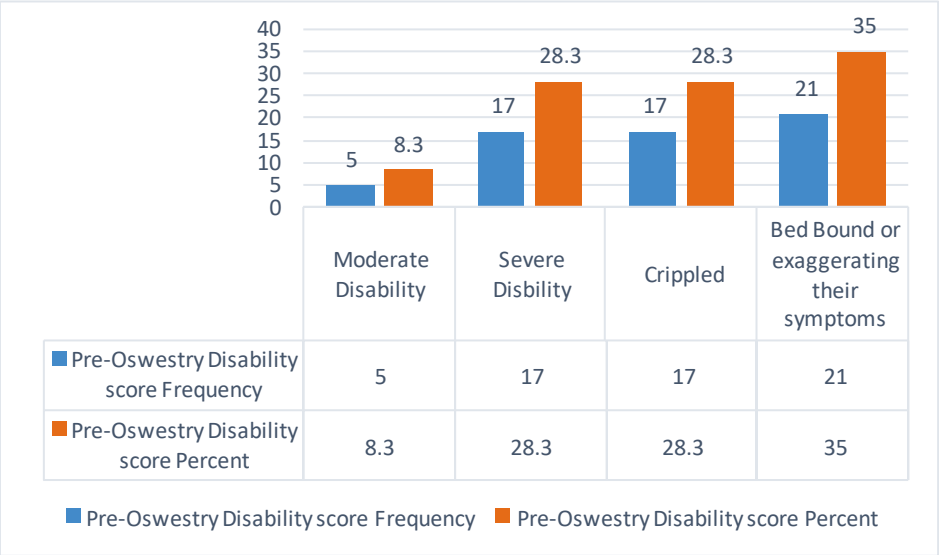

Fig-16: Disability rate of percipients before treatment

4.4.2. The level of Disability rate of after treatment by ODI

This current figure shows very interestingly that after treatments significantly changes their level of disability status in compare to the before interventions and it has shifted to maximum participants 48.3 %(n=29) were moderate disability, 43.3% (n=26) were severe disability, 6.7% (n=4) were crippled and finally only 1.7% (n=1) were distress with minimum disability. So, it unveils that the effect of intervention become effective and satisfactory in reducing the respondent's level of disability in ODI scale.

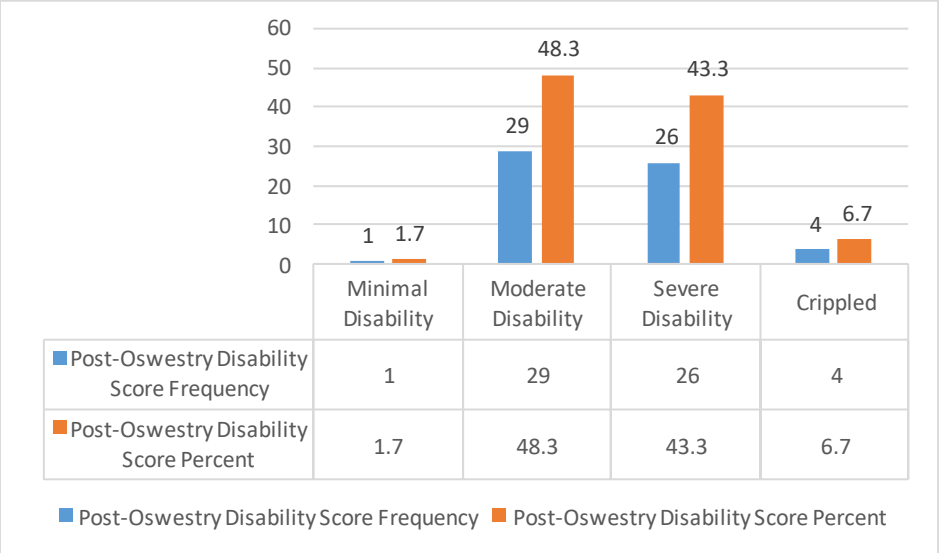

Fig-17: Disability rate of participants after treatment

CHAPTER-V: DISCUSSION

The purpose of this study was to evaluate the effect of early physiotherapy intervention for patients with prolapsed lumbar intervertebral disc prolapsed. The result of this study findings reveal and determine by the researcher which assessed pain at current, pain in lying, pain in sitting, pain standing and walking by using NPRS scale and the level of disability or score were assessed by low back pain ODI index. The researcher found a statistical significant in current pain ($p<.000$), pain in lying ($p < 0.005$), pain in sitting ($p < 0.0005$), pain at sanding ($p < 0.000$), and pain in walking ($p < 0.000$).

In this study, researcher wanted to prove the experimental hypothesis by manipulating the evidence based treatment protocol for patients with PLID before 4 weeks of incidences. Therefore, the result of the study intervention have proven by different statistical analysis and variances during before and after providing intervention of a given protocol to the physiotherapist, the clinical significance were among the all variables were highly accept the alternative hypothesis $p<.000$ and where the analysis fail to reject the alternative hypothesis. Through this finding it is eagerly anticipated the professional will have a protocol to apply in clinical practice for patients with acute PLID. Besides, this evidence will provide confidence to the practitioner to apply the therapeutic intervention easily to the PLID patients.

Within the participants n=60 there are different level of socioeconomic status group are incline and it has found the maximum were upper lower class, 45% (n=27) and next one 43.3% (n=26) were lower middle class and 11.7% (n=7) were upper class. The study also looks the relation between the present pain diagnoses with SES and

found by Chi-Square (P= 002) which means often pain and the level of SEC has certainly correlation. Evidence showed that individuals with higher level of SEC appear more likely to believe stay active during an episode of LBP besides targeted information campaigns are recalled more by low SES groups Suman A et al 2017). Not only that but it has also been suggested by the evidences that rsonal and environmental factors play a role in health behavior which have suggested by many health belief models for instance the education has been found to be related to LBP beliefs (Krismer M, & Tulder M,2007). However, evidence also provides support that often some diseases have relation with individuals social and economic as wells occupational factors having a great influential agent, this study also indicated that participants have influential on their SEC.

The finding of the study represented that the current pain in Numeric Pain Rating Scale (NPRS) were highly significant by pair t-test (pre-test and post-test**)** p<.000 which means of highly significant. Therefore, the mean score of current pain is reducing after receiving physiotherapy treatment protocol. Evidence supported by the Moseley L (2002) the aim of that study was determine the efficacy of a combined physiotherapy treatment manual therapy, exercise therapy and education for patient with LBP. 57 participants allocated to either the four-week physiotherapy program and found that the physiotherapy program reduced pain and disability by a mean of 1.5/10 points on a numerical rating scale (95% CI 0.7 to 2.3) and 3.9 points on the 18-point Roland Morris Disability Questionnaire (95% CI 2 to 5.8) respectively.

The pain status in lying both before and after treatment were significant by pair t-test (pre-test and post-test) p<.000. it has shows maximum were in severe pain about 33.3% (n=20) and the next were 26.7% (n=16) were suffering moderate pain than

30% (n=18) were suffering mild pain. In contrast, after intervention of given protocol it has found only 1% still suffering from severe pain where 65% suffering from mild pain. So the difference provides very good understanding about effectiveness of the conservative physiotherapy management. Ladeira C E,. (2011) noted different evidence based (EBP) guideline have suggested and define early or acute is less than 4 weeks but some argue it may up to six weeks, the protocol also being placed patients education are very important as wells spine manipulation and exercise therapy the most common practice for managing PLID.

Besides, another evidence supported by a systematic review by Clare H, et al 2(004) suggested that the McKenzie therapy and positioning provided similar benefits to an exercise program and found McKenzie therapy does have greater role in decreasing pain and disability in the short term than other standard therapies. Supporting this study by Yadav S et al (2014) revels where subject were having conventional physiotherapy another group received a given protocol includes spinal mobilization, back extension exercise and ergonomic advices and evaluation made by pain intensity (VAS) and back specific disability (Roland Morris Questionnaire) and results have shown comparisons revealed a significant improvement in VAS-leg pain ($p = 0.000$), RMQ score ($p = 0.000$).

Consequentially, by applying the Maitland techniques PA mobilization patients with PLID and result of the study unveil by ANOVA analysis showed that the PA mobilization in compare with press up techniques for improving lumbar extension, found that statistically significant within the group where subjects were asked to perform a press-up maneuver as far as possible without reproducing lumbar pain with standing extension average pain scores (SD) were lower after intervention than before intervention (2.6 ± 1.7 versus 4.0 ± 1.9). Subjects in the PA mobilization group

reported a post treatment pain score of 2.4±1.8 did not differ significantly from the pos treatment pain score of 2.8±1.5.But after statistical analysis, result of my study for pain in sitting was significant t= 3.236, p= 0.0005 (Powers CM et al 2008). So, after comparing this findings it is predicated and can explain the physiotherapy treatment reduces pain in sitting or lying or standing among patients with PLID.

In this study it has found pain in lying before and after treatment also have significantly reduced as it was before treatment pain in lying 10 % (n=6) were no pain, 30% (n=18) were suffering mild pain, 26.7% (n=16) were suffering moderate pain & 33.3% (n=20) were suffering severe pain but after intervention it has significantly reduced in paired t test(p =000). In reverse the willcoxon signed-rank test have performed to measured the post and pre test in lying that also found no negative ranks rather p= .000.

Before treatment within the participants of 60 the rate of pain in standing 11.7% (n=7) mild pain, 33.3% (n=20) were moderate pain & 55% (n=33) and severe pain. In post treatment evaluation it made 73.3% (n=44) were suffering mild pain, 23.3% (n=14) were suffering moderate pain where p value is (P = 000). In the primary stage of pain Jaromi M (2012) suggested to continue physiotherapy the Maitland-manual therapy and Mulligan-therapy as well as the McKenzie method supplemented with other therapies is recommended mainly for short-term treatment of less severe deformations and of acute and sub-acute LBP.

The low back pain Oswestry Disability Index (ODI) was used to evaluate the level of disability among the participants who are suffering from PLID. The Oswestry Disability Index (also known as the Oswestry Low Back Pain Disability Questionnaire) is an extremely important tool that researchers and disability

evaluators use to measure a patient's functional disability (Fairbank JCT & Pynsent, PB 2000). In this study the researcher use this tool before intervention of given treatment protocol and calculated the score than after intervention finally calculated scores. Evidence shows for acute or chronic low back pain and most effective for persistent severe disability in compare the Roland-Morris disability is better for mild to moderate disability (Davies, et,al.,2009).

In this study the researcher look for the rate of disabilities among the participants before and after intervention of given treatment protocol for the patient's with acute PLID, ant that is categories as mild, moderate and sever level. To find the level of significance of the ODI the t formula test done which was significant (P<.000). So, before intervention it has found that among 60 participants of PLID patient's show that before treatment the rate of disability were progressively 8.3% (n=5) were distress with moderate disability, 28.3% (n=17) were severe disability, 28.3% (n=45) were crippled & 35% (n=21) were bed bound or exaggerating their symptoms.

In reverse, the rate of disabilities among 60 participants of PLID patient's found after intervention where 1.7% (n=1) were distress with minimum disability, 48.3% (n=29) were moderate disability, 43.3% (n=26) were severe disability & 6.7% (n=4) were crippled but it was 35%. Therefore, the rate of disability has become decreased very significantly from cripple to moderate and mild level of category. However, study has revels that PLID and rate of disability consequentially have good correlation and functional improvements. Study by Kim T S (2006) mentioned that most of the people who suffered lumbar disc prolapse associated with persistent low back pain and disability are known to be associated with psychological abnormalities. The same study also indicated that disability scale is a good clinical assessment tools to measure

the severity in low back pain, and also a determinant to understanding of returning to work or individuals occupation and further guide level of functional outcome for patients with PLID. The finding of the study also shows that severe disability, 28.3% (n=45) were crippled & 35% (n=21) were bed bound or exaggerating their symptoms. So this indicate it has certainly deep relation with PLID and disability which means the participants were some way from mild disability to crippled types of difficulties are faced in daily activities.

In fact, there are several studies have examined the relation with persons with non-specific low back pain (LBP); and certainly LBP cause of PLID and disability which often report impaired ability to perform daily activities not only but is assumed that patients who feel more disabled and thus report more daily life restrictions and less physically active (Lin, C W C et, al 2011). In conjunction with this finding another study also supported by Porchet, F et.al (2002) explain that there are positive correlation between disability status and PLID or sciatica patients and the PLID which are determine by the imaging findings and also by assessment methods. Further, the evidence shows the individual persons with acute or sub acute LBP appear to vary in the levels of physical activity independency due to pain-related disability in compare to the persons with chronic back pain. Therefore, early interventions of physiotherapy often may relief from the progression or reduce the level of disability among the person with PLID. Nevertheless, several studies have suggested immediate after PLID which may conform by the MRI and relevant physician may promote to introduce early physiotherapy intervention; which will help to minimize the devastating effect of impairment and disability.

Besides, involvement of Sex (male & female) both pre test and Post-Oswestry Disability shows that female were more in percentage of ODI were involved than in

female but the results of the both group were significance. Here, it is also supported by studies and explain lumbar spine disc herniation causes people suffering and often physical impairment and certainly disability which has highest prevalence among 30 to 50 years' age and involvement of ratio between male and female are 2:1 (Jordan J et, al 2008), which means male are more prominent than female to PLID incidences results more prominent to fall in disability categories like mild, moderate, severe and crippled. This level of disability often leads to develop some other associated health problems like psychological problems, such as depression and anxiety, in comparison with healthy controls.

Furthermore in this study the mean age were 46 among the participants and that is the normal phenomena in PLID evidence supported that disc herniation occurs mainly between the fourth and fifth decades of life (mean age of 37 years) but evidences although indicate it may happen at all age group and 4.8% among men over 35 years of age and 2.5% among women (Vialle, L, R et,al 2010). Evidence found that interrelationships among Pain, Disability, and Psychological factors in lumbar disc herniation (LDH) results by Pearson's correlations among VAS, mOSW, BDI, and STAI scores in LDH the functional disability of the LDH in favor of positively related to four variables: pain intensity (r 0.48, p 0.0001), depression (r 0.40, p 0.005), state anxiety (r 0.43, p 0.002), and trait anxiety (r 0.32, p 0.026 (Kim T S (2006).

CHAPTER- VI: LIMITATION OF THE STUDY

- The study was quasi experimental design therefore lack of randomization in to test group that limit the generalizability of the results to a larger population because conclusion about causality are less definitive.
- The researcher in this study can't control pre existing factors and other influences or can't take into account other associated issues that may interference the outcome of intervention.
- In this study the Statistical analyses may not be meaningful due to the lack of randomization and the threats to internal validity of this research.
- The researcher took data from CRP only, so variance and compare to other nature of setting may differ.
- As therapist provide home exercise and education to all patients, here the researcher could not measure their level of understanding prior to provide intervention.

CHAPTER- VI1: CONCLUSION & RECOMMENDATION

The result of this study found early intervention of physiotherapy for patients with PLID are effective and carries significance in clinically. Beginning of the treatment intervention “therefore” proper assessment and conformation about diagnosis about PLID are very essential to good clinical outcome. This study found PLID suffering more in middle age group as well as male dominant and maximum in lower middle class level of their socioeconomic status. Prior to intervention in compare to post test outcome regarding participants pain and level of disabilities have been found very significance in statistically in both indicators (P = 000). Therefore, it is believe the outcome of the study will provide clinician to consider about evidence based treatment protocol for patients with acute PLID. Furthermore, finding of the current study would symbolize to physiotherapist to imply intervention guideline for PLID patient’s management at early stage of their condition. So, according to the study aim and objective about the effectiveness of early physiotherapy treatment for PLID patients have proven and results of study null hypothesis were rejected. But it is strongly recommended a randomize control trail study can be done to find the effete of early physiotherapy intervention for patients with acute PLID. Besides, a multi settings intervention area may included with a large number of sample size study can be carried out with long follow up.

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Appendices

Appendix: 01. Physiotherapy Intervention Protocol/Guideline

Title: Effect of Early Physiotherapy Intervention for Patients with Prolapsed Lumbar Intervertebral Disc (PLID)

Physiotherapy Intervention for Participants				
Intervention basis	Description	Dose	Significance	Comments
Manual therapy				
McKenzie exercise therapy	McKenzie working with the centralization exercises and pro-cedures and Directional preferences of phenomena. Tech. includes- sustain positioning, Extension principle, Flexion rotation or extension loading.	One to five sequences of 8 to 10 movements repetitions. Most often movements need Extension principle.	Systematic review find Clinically very significant for PLID	Physiotherapist will guide and instruct correctly
Mobilization of lumbar spine	Thrust and non thrust mobilization is a common intervention utilized for acute, sub - acute, PLID.	Posterior – anterior mobilization (PA), 10 rep 3 to 5 sets	treating the patients with specific intervention in the lumbar spine is effective.	Physiotherapist will guide and instruct correctly
Exercise therapy	Active or passive physical exercises designed to strengthen or stabilise the spine.	Active leg raises exercise and leg stretching exercise. 20 rep each one 3 times day	Therapeutic exercises and manual therapy promote centralization and improve lumbar extension mobility.	Physiotherapist will guide and instruct correctly
Electro therapy				
Heat therapy	Heat therapy provided by IRR (Infra Red Radiation)	10 minutes over the lumbar area	Help in relax of lumbar spinal muscles and giving comfort to the area.	Heating procedure will be followed
Patient education, home exercise and counseling				
Home exercises	Education and advice have been traditional interventions given to patients with acute, sub acute PLID. Educate the patient about home care program.	McKenzie exercise followed as prescribed by the physiotherapist as well as other exercises.	Physiotherapist will teach how to do at home.	

Education and Counseling	Reassurance and counseling patients to stay active. Postural advice and agronomic advices	A Cochrane review found that advice to stay active consistently beneficial effect for pain reduction and functional improvement.	During assessment and treatment therapist will give counseling

Reference:

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- Tulder, M V, Becker A, Bekkering, T, Breen I, Gril del Real M T, Hutchinson, A, Koes B, Laerum A, & Malmivaara A (2006) European guidelines for the management of acute nonspecific low back pain in primary care. Based on systematic reviews and existing clinical guidelines. *Eur Spine J* (2006) 15 (Suppl. 2): S169–S191 DOI 10.1007/s00586-006-1071-2

Appendix- 02. English Questionnaire/Data collection Form

ENGLISH QUESTIONAIRRE

Data collection instrument: Questionnaire

Instruction: Please fill up the give box with your relevant information

ID NO:				DATE OF INTERVIEW:						

NAME OF INTERVIEWER:	

NAME OF RESPONDENT:	

CONTACT NO:										

PLACE OF DATA COLLECTION:	0	
	1	
	2	

ADDRESS:

VILL.		P.O.	
P.S.		DIST.	

PART- A (SOCIO-DEMOGRAPHIC INFORMATION)

Instruction: Please give circle to the right sided given number as it is appropriate with you

Serial No.	Question	Coding Category
1.	What is your current age? (In years)	1 = 20 - 40 2 = 41 - 60 3 = 61 - 80
2.	Sex	1= Male 2 = Female
3.	What is your marital status?	1 = Married 2 = Unmarried 3 = Widow 4 = Divorced 5 = Widower
4.	What is your educational qualification?	1 = Illiterate 2 = Primary or Literate 3 = Middle school completion 4 = High school Certificate 5 = Intermediate 6= Graduate 7= Professional degree
5.	What is your religion?	1 = Muslim 2 = Hindu 3 = Christian 4 = Buddhist 5 = Others
6.	Per Capital income/ month.	1 = 1000 - 10000 2 = 11000 - 15000 3 = 16000 – 20000 4 = 21000 - 25000
7.	What is your occupation?	1 = Unemployed 2 = Unskilled 3 = Semi skilled worker 4 = Skilled worker 5 = Clerk, Shop owner, Farm owner 6 = Semi profession 7 = Profession

Measuring Pain Intensity (pre test)

The 0-to-10 Numerical Rating Scale (NRS): The Numeric Pain Rating Scale (NPRS) is a unidimensional measure of pain intensity in adults.

Instructions: Please tell me the number that best represents your pain in the past (24 hours, seven days), on a 0-to-10 scale, where 0 = No pain and 10 = Pain as intense as you can imagine.

- Please select the number that best represents your ***current pain intensity***

- Please select the number that best represents your ***pain intensity while in lying (0 to 10 minutes)***

- Please select the number that best represents your ***pain intensity while in sitting (0 to 10 minutes)***

- Please select the number that best represents your ***pain intensity while in standing (0 to 10 minutes)***

Please select the number that best represents your ***pain intensity while in walking (0 to 10 minutes)***

Oswestry Low Back Pain Disability Questionnaire (Davidson M & Keating J 2001).

The Oswestry Disability Index (also known as the Oswestry Low Back Pain Disability Questionnaire) is an extremely important tool that researchers and disability evaluators use to measure a patient's permanent functional disability. The test is considered the 'gold standard' of low back functional outcome tools.

Scoring instructions

For each section the total possible score is 5: if the first statement is marked the section score = 0; if the last statement is marked, it = 5. If all 10 sections are completed the score is calculated as follows:

Example: 16 (total scored) 50 (total possible score) x 100 = 32% . If one section is missed or not applicable the score is calculated: 16 (total scored) 45 (total possible score) x 100 = 35.5%

Minimum detectable change (90% confidence): 10% points (change of less than this may be attributable to error in the measurement)

Interpretation of scores 0% to 20%: minimal disability:	The patient can cope with most living activities. Usually no treatment is indicated apart from advice on lifting sitting and exercise.
21%-40%: moderate disability:	The patient experiences more pain and difficulty with sitting, lifting and standing. Travel and social life are more difficult and they may be disabled from work. Personal care, sexual activity and sleeping are not grossly affected and the patient can usually be managed by conservative means.
41%-60%: severe disability:	Pain remains the main problem in this group but activities of daily living are affected. These patients require a detailed investigation.
61%-80%: crippled:	Back pain impinges on all aspects of the patient's life. Positive intervention is required.
81%-100%:	These patients are either bed-bound or exaggerating their symptoms.

Oswestry Low Back Pain Disability Questionnaire

Instructions

This questionnaire has been designed to give us information as to how your back or leg pain is affecting your ability to manage in everyday life. Please answer by checking ONE box in each section for the statement which best applies to you. We realise you may consider that two or more statements in any one section apply but please just shade out the spot that indicates the statement which most clearly describes your problem.

Section 1 – Pain intensity	
	I have no pain at the moment
	The pain is very mild at the moment
	The pain is moderate at the moment
	The pain is fairly severe at the moment
	The pain is very severe at the moment
	The pain is the worst imaginable at the moment

Section 2 – Personal care (washing, dressing etc)	
	I can look after myself normally without causing extra pain
	I can look after myself normally but it causes extra pain
	It is painful to look after myself and I am slow and careful
	I need some help but manage most of my personal care
	I need help every day in most aspects of self-care
	I do not get dressed, I wash with difficulty and stay in bed

Section 3 – Lifting	
	I can lift heavy weights without extra pain
	I can lift heavy weights but it gives extra pain
	Pain prevents me from lifting heavy weights off the floor, but I can manage if they are conveniently placed eg. on a table
	Pain prevents me from lifting heavy weights, but I can manage light to medium weights if they are conveniently positioned
	I can lift very light weights
	I cannot lift or carry anything at all

Section 4 – Walking	
	Pain does not prevent me walking any distance
	Pain prevents me from walking more than 1 mile
	Pain prevents me from walking more than 1mile
	Pain prevents me from walking more than 1/2 mile
	I can only walk using a stick or crutches 100 yards
	I am in bed most of the time

Section 5 – Sitting	
	I can sit in any chair as long as I like
	I can only sit in my favourite chair as long as I like
	Pain prevents me sitting more than one hour
	Pain prevents me from sitting more than 30 minutes
	Pain prevents me from sitting more than 10 minutes
	Pain prevents me from sitting at all

Section 6 – Standing	
	I can stand as long as I want without extra pain
	I can stand as long as I want but it gives me extra pain
	Pain prevents me from standing for more than 1 hour
	Pain prevents me from standing for more than 30 minutes
	Pain prevents me from standing for more than 10 minutes
	Pain prevents me from standing at all

Section 7 – Sleeping	
	My sleep is never disturbed by pain
	My sleep is occasionally disturbed by pain
	Because of pain I have less than 6 hours sleep
	Because of pain I have less than 4 hours sleep
	Because of pain I have less than 2 hours sleep
	Pain prevents me from sleeping at all

Section 8 – Sex life (if applicable)	
	My sex life is normal and causes no extra pain
	My sex life is normal but causes some extra pain
	My sex life is nearly normal but is very painful
	My sex life is severely restricted by pain
	My sex life is nearly absent because of pain
	Pain prevents any sex life at all

Section 9 – Social life	
	My social life is normal and gives me no extra pain
	My social life is normal but increases the degree of pain
	Pain has no significant effect on my social life apart from limiting my more energetic interests eg, sport
	Pain has restricted my social life and I do not go out as often
	Pain has restricted my social life to my home
	I have no social life because of pain

Section 10 – Travelling	
	I can travel anywhere without pain
	I can travel anywhere but it gives me extra pain
	Pain is bad but I manage journeys over two hours
	Pain restricts me to journeys of less than one hour
	Pain restricts me to short necessary journeys under 30 minutes
	Pain prevents me from travelling except to receive treatment

Thank you for participation

Appendix- 03. Bangla Questionnaire or data collection Form

তথ্য সংগ্রহের উপকরনঃ প্রশ্নপত্র (বাংলা)

সনাক্তকরণ নংঃ তারিখঃ

সাক্ষাৎকার গ্রাহকের নামঃ

উত্তর দাতার নামঃ

তথ্য সংগ্রহের স্থানঃ

ঠিকানাঃ

রোগের নামঃ

রোগে আক্রান্তের সময়কালঃ

পর্ব -ক (আর্থসামাজিক সম্পর্কিত প্রশ্ন)

ক্রমিক নং	প্রশ্ন	কোড			
১	আপনার বর্তমান বয়স কত? (বছর হিসেবে)				
২	লিঙ্গ	পুরুষ =1	মহিলা =২		
৩	আপনার বৈবাহিক অবস্থা কি?	বিবাহিত =১	অবিবাহিত =২	বিধবা = ৩	ডিভোর্সি =৪
		বিপত্নীক = ৫			
৪	আপনার শিক্ষাগত যোগ্যতা কি?	অশিক্ষিত = ১	প্রাইমারী থেকে কম =২	প্রাইমারী সম্পূর্ণ = ৩	এস,এস,সি সম্পূর্ণ= 4
		এইচ,এস,সি সম্পূর্ণ = ৫	স্নাতক = ৬	প্রফেশনাল ডিগ্রি =৭	
৫	আপনার ধর্ম কি?	মুসলমান =১	হিন্দু = ২	খ্রিস্টান= ৩	বুদ্ধ = ৪
		বিপত্নীক = ৫	অন্যান্য = ৫		
৬	আপনার মাসিক আয় কত ?	1. 1000-100000	2. 11000-150000	3. 16000-20000	4. 21000-25000
		5. 225000 থেকে বেশি			
৭	আপনার পেশা কি ছিল?	বকোর =1	করমগয়োন হনে=2	মাঝারি দড়া কর্মজীবী =৩	দড়া কর্মজীবী =৪
		কেরানি, দোকান মালিক, ফার্মের মালিক =৫	আধা প্রফেশনাল =৬	প্রফেশনাল =৭	

প্রারম্ভিক ব্যথার তীব্রতা পরিমাপ করনঃ ০ থেকে ১০ পর্যন্ত (নিউমেরিক্যল রেটিং স্কেল)

নির্দেশনা, এখানে ০ = ব্যথা মুক্ত অবস্থা ১০ = সবচেয়ে বেশী ব্যথা

দয়া করে আমাকে আপনার ব্যথার তীব্রতার একটা নাম্বার বলেন যা (০থেকে ১০) স্কেলের মধ্যে পরে ।

০ ব্যথামুক্ত	১	২	৩	৪	৫ মাঝারি ধরনের ব্যাথা	৬	৭	৮	৯	১০ অনেক বেশী ব্যাথা

দয়া করে একটি নাম্বার নির্বাচন করুন যা আপনার ব্যথার তীব্রতা রবর্তমান অবস্থাকে উপস্থাপন করবে ।

০ ব্যথামুক্ত	১	২	৩	৪	৫ মাঝারি ধরনের ব্যাথা	৬	৭	৮	৯	১০ অনেক বেশীব্যাথা

দয়া করে একটি নাম্বার নির্বাচন করুন যা আপনার শুয়ে থাকা অবস্থায় ব্যথার তীব্রতাকে উপস্থাপন করবে ।

০ ব্যথামুক্ত	১	২	৩	৪	৫ মাঝারি ধরনেরব্যাথা	৬	৭	৮	৯	১০ অনেক বেশীব্যাথা

দয়া করে একটি নাম্বার নির্বাচন করুন যা আপনার বসে থাকা অবস্থায় ব্যথার তীব্রতাকে উপস্থাপন করবে ।

০ ব্যথা মুক্ত	১	২	৩	৪	৫ মাঝারি ধরনেরব্যাথা	৬	৭	৮	৯	১০ অনেক বেশীব্যাথা

দয়াকরেএকটিনাম্বারনির্বাচনকরুনযাআপনারদাড়িয়েথাকাঅবস্থায়ব্যথারতীব্রতাকেউপস্থাপনকরবে ।

০ ব্যথামুক্ত	১	২	৩	৪	৫ মাঝারি ধরনের ব্যাথা	৬	৭	৮	৯	১০ অনেক বেশী ব্যাথা

দয়াকরেএকটিনাম্বারনির্বাচনকরুনযাআপনারহাটাথাকাঅবস্থায়ব্যথারতীব্রতাকেউপস্থাপনকরবে ।

০ ব্যথামুক্ত	১	২	৩	৪	৫ মাঝারি ধরনেরব্যাথা	৬	৭	৮	৯	১০ অনেক বেশীব্যাথা

অসওয়েস্ট্রি-র কোমর ব্যথা সম্পর্কিত অক্ষমতার প্রশ্নবলীঃ

অধ্যায়-১: ব্যাথার তীব্রতা	
1	এই মুহূর্তে আমার কোন ব্যাথা নাই ।
2	এই মুহূর্তে ব্যাথা খুব কম ।
3	এই মুহূর্তে ব্যাথা মাঝারি ধরনের ।
4	এই মুহূর্তে ব্যাথা একটুবেশি
5	এই মুহূর্তে ব্যাথা অনেক বেশি।
6	এই মুহূর্তে ব্যাথার তীব্রতা এতই বেশি যা কল্পনার বাইরে

অধ্যায় – ২: ব্যক্তিগতযত্ন (গোসলসাজ- সজ্জাইত্যাদি)	
1	অতিরিক্ত ব্যথা ছাড়াই সাধারনত আমি নিজের দেখাশোনা করতে পারি ।
2	সাধারনত নিজের দেখাশোনা করতে কিছুটা ব্যাথা অনুভূত হয় ।
3	নিজের দেখাশোনা করা কষ্টসাধ্য হয় এবং আমি ধীরগতি ও সাবধান থাকি ।
4	নিজেরদেখাশোনা করতে আমর কিছু সাহায্যের প্রয়োজন হয় কিন্তু বেশিরভাগ কাজ আমি নিজেই করি ।
5	বেশিরভাগ ব্যক্তিগত কাজে প্রতিদিনই আমার সাহায্যে প্রয়োজন হয় ।
6	আমি নিজে পোশাকপরিধান করতেপারিনা, নিজেরধোয়ামুছা করতে কষ্টসাধ্যহয়এবংআমিবিছানায় থাকি

অধ্যায় – ৩: ভারী বস্তু উত্তোলন করা	
1	আমি কোন ব্যথা ছাড়াইভারীওজন তুলতে পারি ।
2	ভারীওজনউঠাতেপারিকিন্তুএরফলেআমারকিছুটাব্যাথাহয় ।
3	ব্যথারজন্যআমিমেঝেথেকেভারীওজনতুলতেপারিনাকিন্তুসুবিধামতজায়গায়থাকলেউত্তোলনকরতেপারিযেমন- টেবিলের উপর থেকে ।
4	ব্যথারজন্যেআমিভারীজিনিসতুলতেপারিনাকিন্তুহালকাথেকেমাঝারীওজনেরজিনিসসুবিধামতজায়গায়থাকলেউঠাতেপারি
5	আমিখুবইহালকাওজনউঠাতেপারি ।
6	আমিকোনকিছুইউত্তোলন ও বহনকরতেপারিনা ।

অধ্যায় – ৪ : (হাঁট!)	
1	ব্যথাছাড়াআমিযেকোনদুরত্বেহেঁটেযেতেপারি ।
2	ব্যথার জন্যআমি ১ মাইলেরবেশী হাঁটতে পারিনা ।
3	ব্যথার জন্যআমি ১/২ (আধা) মাইলের বেশীহাঁটতে পারিনা ।
4	ব্যথার জন্যআমি ১০০ গজেরবেশীহাঁটতেপারিনা ।
5	আমি শুধু লাঠিঅথবা ক্রাচ ব্যবহার করে হাটঁতে পারি ।
6	বেশিরভাগসময় আমি বিছানায় থাকি

অধ্যায় – 5 : (বসা)	
1	আমি যেকোন চেয়ারেযতক্ষনপর্যন্তইচ্ছাবসেথাকতেপারি ।
2	আমি শুধু আমারপছন্দমতচেয়ারেযতক্ষনইচ্ছাবসেথাকতেপারি ।
3	ব্যথার জন্য আমি ১ ঘন্টারবেশিবসেথাকতেপারিনা ।
4	ব্যথার জন্য আমি ৩০ মিনিটেরবেশিবসেথাকতেপারিনা ।
5	ব্যথার জন্য আমি ১০ মিনিটেরচেয়ে বেশি বসে থাকতে পারিনা ।
6	ব্যথার জন্য আমি একদমই বসেতে পারিনা ।

অধ্যয় – ৬: (দাড়ানো	
1	ব্যথা ছাড়া আমি যতক্ষন ইচ্ছা দাড়িয়ে থাকতেপারিকিন্তুএরফলে আমার কিছুটা ব্যথা হয় ।
2	ব্যথার জন্য আমি ১ ঘন্টার বেশি দাড়াতে পারিনা ।
3	ব্যথার জন্য আমি ৩০ মিনিটের বেশি দাড়াতে পারিনা ।
4	ব্যথার জন্য আমি ১০ মিনিটেরবেশি দাড়াতে পারিনা ।
5	ব্যথারজন্যআমি একেবারেই দাড়াতে পারিনা
6	ব্যথা ছাড়া আমি যতক্ষন ইচ্ছা দাড়িয়ে থাকতে পারি কিন্তু এর ফলে আমার কিছুটা ব্যথা হয় ।

	অধ্যায় – ৭: ঘুমানো
1	ব্যথার জন্য আমার ঘুম কখনও নষ্টহয়না ।
2	ব্যথারজন্যআমারঘুমকদাচি ও নষ্টহয়না ।
3	ব্যথারজন্যআমার ৬ ঘন্টারকমঘুমহয় ।
4	ব্যথার জন্য আমার ৪ ঘন্টারকমঘুমহয় ।
5	ব্যথার জন্য আমার ২ ঘন্টারকমঘুমহয় ।
6	ব্যথার জন্যআমারএকদমইঘুমহয়না

	অধ্যায় – ৮: যৌনজীবন
1	আমার যৌন জীবনস্বাভাবিকএবংএরফলেআমারকোনব্যথাঅনুভূতহয়না ।
2	আমার যৌন জীবনস্বাভাবিকএবংএরফলেআমারকিছুব্যথাহয় ।
3	আমার যৌন জীবনপ্রায়স্বাভাবিককিন্তুএরফলেঅনেকব্যথাঅনুভূতহয় ।
4	ব্যথার জন্য আমারযৌনজীবনগুরুতরভাবেবাধাঁগ্রস্থ ।
5	ব্যথার জন্য আমারযৌনজীবনপ্রায়বন্ধ ।
6	ব্যথার জন্যআমারযৌনজীবনএকদমইবন্ধ

	অধ্যায় – 10 : ভ্রমন
1	ব্যথা ছাড়া আমি যেকোনস্থানেভ্রমনকরতেপারি ।
2	আমি যে কোন স্থানে ভ্রমনকরতেপারি, তবেএরফলেআমারকিছুটাব্যথাঅনুভূতহয় ।
3	ব্যথার জন্য আমার দুইঘন্টারবেশিভ্রমনকরতেকষ্টহয় ।
4	ব্যথার জন্য আমিএকঘন্টারবেশিভ্রমনকরতেপারিনা ।
5	ব্যথা আমাকে ৩০ মিনিটেরচেয়েকমসময়েরপ্রয়োজনীয়ভ্রমনে ও বাধাদেয় ।
6	ব্যথার জন্যআমিচিকিৎসানেওয়াছাড়াঅন্যকোনভ্রমনকরতেইপারিনা

	অধ্যায় – ৯: সামাজিকজীবন
1	আমারসামাজিকজীবনস্বাভাবিকএবংএরফলেআমারকোনব্যথাহয়না ।
2	আমারসামাজিকজীবনস্বাভাবিককিন্তুএরফলেব্যথারতীব্রতাবেড়েযায় ।
3	কর্মশক্তিপূর্নকাজযেমন- খেলা ধুলা ছাড়া আমার সামাজিক জীবনের উপর ব্যথার কোন গুরুত্বপূর্ণ প্রভাব নেই ।
4	আমারসামাজিকজীবনব্যথারজন্যসীমাবদ্ধএবংপ্রায়ইবাহিরেবেরহতেপারিনা ।
5	ব্যথারজন্যবাড়িতেআমারসামাজিকজীবনসীমাবদ্ধ ।
6	ব্যথারজন্যআমারসামাজিকজীবনএকেবারেইসীমাবদ্ধ ।

আপনার সহযগতিার জন্য ধনাবাদ

Appendix – 04. Inform Consent English

INFORMED CONSENT (English)

I am Md. Faruqul Islam , a student of Master in Physiotherapy (Msc PT) in Bangaldesh Health prefession Instituite (BHPI) ; affiliated the post graduation faculty of medicine of university of Dhaka session of 2016 – 2017. to accomplish my master degree i have to carry out a full disseartion and my research title is " Effect of Early Physiotherapy Intervention for Patients with Prolapse Lumbar Intervertebral Disc (PLID)". It is expected by doing this study we will be able to understand the importance of early physiotherapy intervention for patients with low backk pain, at the end the patients will be benifited from the services..

Therefore, i am expecting your full cooperation to give me details information to complete this questionnaire. this information would n't causes any harm for your and your family. Researcher will take this information as confedential and nothing will be disclose to others. Your participation in totally voluntart if you feel hesitation or discomfort you can withdraw your paticipation without disgrace. Furthermore, if you have any quarry you can communicate with researcher.

I am (participants) willingly and eagerly participate in this study.

Partcipants signature: ----------

Researcher signature: ----------

With Thanks

Name of the Interviewer:…....

Signature of the Researcher:.....

Name of the attendance:……...

Appendix: 05. Bangla Inform Consent

সম্মতিপত্র (বাংলা)

আমি মোঃ ফারুকুল ইসলাম বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট এর ২০১৬ – ২০১৬ সেশনের মাস্টার্স ইন ফিজিওথেরাপির একজন ছাত্র আমার মাষ্টার্স ডিগ্রি অর্জন করার জন্য আমাকে একটি গবেষনা করতে হচ্ছে , যার শিরোনাম হল "Effect of Early Physiotherapy Intervention to Patient with Prolapse lumbar Intervertebral Disc (PLID)" "প্রলাপস লাম্বার ইন্টার ভার্টিব্রাল ডিস্ক এর রোগীদের ক্ষেত্রে যথাসময়ের পূর্বে ফিজিওথেরাপির ভূমিকা" এই গবেষনা থেকে আমরা কোমর ব্যথার ফিজিওথেরাপির গুরুত্ব সম্পকে জানতে পারবো যা পরবর্তীতে রোগীদের সেবা দিতে সাহায্য করবে ।

অতএব, আমি আপনার একান্ত সহযোগীতা কামনা করছি যা প্রশ্নাবলী পূরনে সাহায্য করবে এবং এই তথ্য আপনার এবং আপনার পরিবারের কোন ক্ষতিকর প্রভাব ফেলবে না । গবেষক আপনার সব ধরনের তথ্য গোপন রাখবেন এবং কারো কাছে উপস্থাপন ও করা হবে না । আপনি স্বেচ্ছায় এখানে অংশগ্রহন করতে পারবেন এবং যে কোন সময় আপনি প্রত্যাহার ও করতে পারবেন । এই ব্যাপারে যদি আপনার কোন জানার থাকে তাহলে গবেষকের সাথে যোগাযোগ করতে পারেন ।

আমি নিজ ইচ্ছায় এই গবেষনায় অংশ গ্রহন করছি ।

অংশ গ্রহন কারীর স্বাক্ষর

গবেষকের স্বাক্ষর

সাক্ষাত গ্রহন কারীর স্বাক্ষরঃ

সাক্ষীর স্বাক্ষরঃ

ধন্যবাদান্তেঃ

গবেষকের

Appendix: 06. Institutional Review Board (IRB) Approval

বাংলাদেশ হেল্‌থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)
Bangladesh Health Professions Institute (BHPI)
(The Academic Institute of CRP)

Ref.

Date: 05/05/2018

CRP-BHPI/IRB/05/18/210

To
Md. Faruqul Islam
M.Sc. in Physiotherapy (MPT)
Session: 2017-2018, Student ID **1111600389**
BHPI, CRP-Savar, Dhaka-1343, Bangladesh

Subject: Approval of thesis proposal **"Effect of Early Physiotherapy Intervention for Patients with Prolapsed Lumber Intervertebral Disc (PLID)"** by ethics committee.

Dear Md. Faruqul Islam

Congratulations,

The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application to conduct the above mentioned thesis, with yourself, as the Principal Investigator" The Following documents have been reviewed and approved:

S.N.	Name of Documents
1.	Thesis Proposal
2.	Questionnaire (English and / or Bangla version)
3.	Information sheet & consent form.

Since the study involves use of a structured questionnaire including Socio-demographic questions, Numeric pain rating scale and Oswestry low back pain disability index questionnaire to find out the effect of early physiotherapy intervention for patients with Prolapsed Lumber Inter-vertebral Disc (PLID) that may take 20 to 25 minutes to answer. Since, there is no likelihood of any harm to the participants, the members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 9.00 AM on October 20, 2018 at BHPI.

The institutional Ethics committee expects to be informed about the progress of the study, any changes occurring in the course of the study, any revision in the protocol and patient information or informed consent and ask to be provided a copy of the final report. This Ethics committee is working accordance to Nuremberg Code 1947, World Medical Association Declaration of Helsinki, 1964 - 2013 and other applicable regulation.

Best regards,

Muhammad Millat Hossain
Assistant Professor, Dept. of Rehabilitation Science
Member Secretary, Institutional Review Board (IRB)
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

সিআরপি-চাপাইন, সাভার, ঢাকা-১৩৪৩, বাংলাদেশ, ফোন ঃ ৭৭৪৫৪৬৪-৫, ৭৭৪১৪০৪ ফ্যাক্স ঃ ৭৭৪৫০৬৯
CRP-Chapain, Savar, Dhaka-1343, Tel : 7745464-5, 7741404, Fax : 7745069, E-mail : contact@crp-bangladesh.org, www.crp-bangladesh.org

Appendix: 07 . Application to collect data from the department

To

Head of the Department

Department of physiotherapy

Centre for the Rehabilitation of the Paralysed (CRP)

Subject: Give permission to collect research data

Dear Sir,

It is my pleasure to draw your kind attention that I am Md. Faruqul Islam, student of Master in Physiotherapy, BHPI, session of 2017 -2018. To accomplish my master degree I have to carry out a thesis project which is a mandatory part of my course curriculum. According to my research title " Effect of Early Physiotherapy Intervention for Patients with Prolapsed Lumbar Inter vertebral Disc (PLID)" I have choose the department of physiotherapy, CRP to obtain my desire data and necessary contents from the department of Savar and Mirpur for a certain period. It will be very confidential and will not causes any harm to the existing services

Therefore, I believe, you will kindly allow me to get necessary information from your clients to complete my desire goal.

Sincerely yours

18/12/17

Md. Faruqul Islam
MPT studet
Roll no: 01

Approved
18/12/17