

# Effects of Progressive Physiotherapy along with or without active rest at hospital for the patients with chronic nonspecific Low Back Pain (LBP) in Bangladesh

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## Abstract

**Background:** Low Back pain is a significant health condition globally suffered by the middle and older aged population Van-Tulder, et al., 1995 due to its impact on work disability, absenteeism and costs Hoy, et al., 2012. Physiotherapy with active rest and therapeutic intervention including mobilization, manipulation, exercises therapy and electrotherapy is the choice of treatment as conservative management whereas surgery is required in case of advanced neurological involvement. The objective of the study was to find out the Effects of Progressive Physiotherapy along with or without active rest at hospital for the patients with chronic nonspecific Low Back Pain (LBP) in Bangladesh. **Study Design/Methods:** Experimental Research Design with simple random sampling used in this study for find out the results of region specific and non-region specific spinal manual therapy of 20-55 years of aged peoples with pre and posttest basis. **Results:** The study showed as within group analysis that both physiotherapy with or without active rest is effective to reduce pain and back disability for low back pain patient whereas between group results showed that physiotherapy with active rest is significantly effective rather than physiotherapy without active rest for back pain patients. Within group and between group results showed that the  $P < 0.05$  which mean it's strongly significant and reject the null hypothesis and accept alternative hypothesis. **Conclusion and Recommendations:** Physiotherapy with active rest is highly effective than physiotherapy without active rest for LBP patients whereas individually both group of treatment is significantly effective. The results of this study are pursuing the effects of physiotherapy with or without active rest for 10 days 20 session's intervention effects whereas its unknown the long term effects so it should be follow-up research study of these interventions that would be more valid.

**Key words:** Progressive Physiotherapy, Active rest at hospital, Chronic Low Back Pain

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**Background of the Study:** Low Back pain is one of the common sufferings of middle and older aged peoples in developing countries. Episodes of low back pain may be acute, sub-acute, or chronic depending on the duration (Casazza, 2012). The pain may be characterized as a dull ache, shooting or piercing pain, or a burning sensation which depends of the involvement of the somatosensory involvement as muscular imbalance, nerve root involvement, disc prolapse, faulty biomechanics etc (Borczuk, 2013). Physiotherapy including mobilization, manipulation, exercises therapy and electrotherapy is the choice of treatment as conservative management whereas surgery is required in case of advanced neurological involvement. Active rest helps to enhance the healing and central settlement of intervertebral disc (Vos, 2012).

Low back pain (LBP) is a common disorder involving the muscles, nerves, and bones of the back. Pain can vary from a dull constant ache to a sudden sharp feeling (Borczuk, 2013). Low back pain may be classified by duration as acute (pain lasting less than 6 weeks), sub-chronic (6 to 12 weeks), or chronic (more than 12 weeks).

The condition may be further classified by the underlying cause as mechanical, non-mechanical, or referred pain. The symptoms of low back pain usually improve within a few weeks from the time they start, with 40-90% of people completely better by six weeks (Manusov, 2012).

In most episodes of low back pain, a specific underlying cause is not identified or even looked for, with the pain believed to be due to mechanical problems such as muscle or joint strain. If the pain does not go away with conservative treatment or if it is accompanied by "red flags" such as unexplained weight loss, fever, or significant problems with feeling or movement, further testing may be needed to look for a serious underlying problem (Casazza, 2012). In most cases, imaging tools such as X-ray computed tomography are not useful and carry their own risks. Despite this, the use of imaging in low back pain has increased (Borczuk, 2013). Some low back pain is caused by damaged intervertebral discs, and the straight leg raise test is useful to identify this cause. In those with chronic pain, the pain processing system may malfunction, causing large amounts of pain in response to non-serious events (Salzberg, 2012).

The treatment of acute nonspecific low back pain of rapid onset is typically with simple pain medications and the continuation of as much normal activity as the pain allows. Medications are recommended for the duration that they are helpful. A number of other options are available for those who do not improve with usual treatment. Opioids may be useful if simple pain medications are not enough, but they are not generally recommended due to side effects. Surgery may be beneficial for those with disc-related chronic pain and disability or spinal stenosis. No clear benefit has been found for other cases of non-specific low back pain. Low back pain often affects mood, which may be improved by counseling or antidepressants. Additionally, there are many alternative medicine therapies, including the Alexander technique and herbal remedies, but there is not enough evidence to recommend them confidently. The evidence for chiropractic care, physiotherapy and spinal manipulation is mixed (Casazza, 2012).

Approximately 9 to 12% of people (632 million) have LBP at any given point in time, and nearly 25% report having it at some point over any one-month period. About 40% of people have LBP at some point in their lives, with estimates as high as 80% among people in the developed world. Difficulty most often begins between 20 and 40 years of age. Men and women are equally affected. Low back pain is more common among people aged 40-80 years, with the overall number of individuals affected expected to increase as the population ages (Borzuk, 2013).

**Justification:** Globally Physiotherapy is the choice of treatment for mechanical chronic LBP patients So it's important to find out the effects of physiotherapy with or without active rest and specific intervention which may guide us for the choice of treatment as best possible intervention for LBP Management in Bangladesh like global world.

**Objectives:**

- \* To find out the Effects of Progressive physiotherapy (Manual Therapy & Electrotherapy) with active bed rest (3 Weeks) at hospital for Prolapsed Intervertebral Disc (PLID) with radiculopathy.
- \* To find out the Effects of Progressive physiotherapy (Manual Therapy & Electrotherapy) without active bed rest (3 Weeks) at hospital for Prolapsed Intervertebral Disc (PLID) with radiculopathy.
- \* To find out the pre and posttest disability of both group of clients.
- \* To find out the demographic characteristics in Bangladesh.

**Study Design/Methods:** This study was designed to evaluate the effectiveness of progressive physiotherapy along with or without active rest at hospital for the management of chronic nonspecific Low Back Pain respondents in Bangladesh. It was pre and posttest evaluation of pain and disability situation of low back pain respondents where it used numeric pain rating scale, goniometry, manual muscle testing and the Roland-Morris Low Back Pain and Disability Questionnaire as measurement tools for measuring the pain, range of motion, muscle strength and lower back disability. Experimental Research Design with simple random sampling used in this study for find out the results of region specific and non-region specific spinal manual therapy of 20-55 years of aged peoples with pre and posttest basis. The study area was at Physiotherapy Center, BRB Hospitals Ltd. And Physiotherapy Unit of SP Hospitals Ltd. Initial assessment and recording of pain and disability score then 10 session's spinal manual therapy (Progressive Physiotherapy group as out door and Physiotherapy with active rest at hospital) then reassessment (final recording) of the same score of chronic nonspecific low back pain patient were proceed in this study. Low Back Pain patient were assessed by the qualified post graduate level Physiotherapist who has proper training on spinal manual therapy whereas he also proceed the treatment sessions for both group of participants as experimental group (E1, E2, E3.....) and control group (C1, C2, C3.....). Pretest (During Assessment) and Posttest (After 10 sessions of treatment) data were collected whereas it was used the written questionnaire formatted by the researcher. Pre and post test data were collected with Numeric Pain Rating Scale's score for pain level and The Roland - Morris Low Back Pain and Disability Questionnaire for disability score however the posttest were performed after completion of 10 days 20 sessions of treatment (Two sessions in a day). The Physiotherapist who assess and treat the patients he was blinded to the group setting and treatment allocation as he did it randomly by lottery system.

**Results/ Major findings:**

The baseline characteristics of the participants has described in table below. The participants were mainly male in Experimental Group with the mean age of 44.2 years with chronic symptoms as mean duration is 13.80 weeks and in control group mean age is 43.8 years and mean duration of pain is 11.06 weeks. The baseline characteristics of the participants has described in table below. The participants were mainly male in Experimental Group with the mean age of 44.2 years with chronic symptoms as mean duration is 13.80

weeks and in control group mean age is 43.8 years and mean duration of pain is 11.06 weeks. The mean intensity of pain and disability in experimental 6.64 (VAS) and 11.06 (Roland-Morris Disability Questionnaire) group whereas the control group pain

intensity and disability score is as 7.4 and 16.20. Regarding this study it was considered total 30 patients for both group as 15 in experimental group and another 15 in control group.

### Demographic Characteristics of the Participants at Baseline:

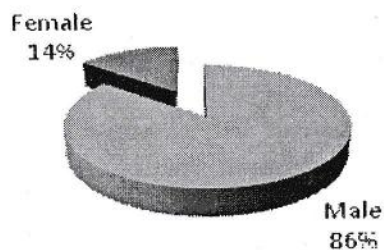
Variables	Control Group
Age (Years)	43.8 (8.87)
<b>Sex</b>	
Male	14(93.33%)
Female	01(7.7%)
Duration of Symptoms (Month)	11.06 (8.28)
Weight(kg)	71.53 (7.83)
Height (meter)	1.64 (0.10)
BMI (kg/m <sup>2</sup> )	26.66 (1.26)
<b>Living Area</b>	
Urban	14 (93.33%)
Rural	01 (6.67%)
<b>Educational Level</b>	
Post Graduate Level	07 (46.67%)

Graduate Level	07(46.67%)
H.S.C Level	01(6.67%)
Diabetes	11 (73.33%)
Surgery	00 (00%)
Spinal Deformity	05 (33.33%)
Pain intensity (NPRS, 0–10)	7.4 (0.90)
Disability (RMDQ, 0–24)	16.20 (3.82)

**N.B:** Categorical variables are expressed as number (%); continuous variables are expressed as mean (SD). RMDQ (Roland-Morris Disability Questionnaire), NPRS (numeric pain rating scale).

This experimental study consist two groups as trial group (Region specific SMT) and control group where combine group there were about 86% male and 14% female out of 28 participants. There were about 93.33% male participants and

**Male and Female Ratio of the Participants**



Regarding this study the mean duration of symptoms is about 13.8 (months) and SD 11.95 in experimental group and about 11.06 (months) and SD about 8.28

in control group which means all participants are chronically suffering from low back pain and mean duration of both group is close in range. The experimental group participants was mostly over weight as the mean BMI was 27.53 kg/ms<sup>2</sup> and SD was 1.47 and control group BMI was 26.66 kg/ms<sup>2</sup> and SD was 1.26 which is also showed over weight. High BMI is one of the risk factors of chronic pain whereas increased BMI also predisposing factors for chronic low back pain.

### Pre and Post Test combine sample Pain Intensity:

	PRE TEST PAIN INTENSITY	POST TEST PAIN INTENSITY
EXPERIMENTAL GROUP	6.64 (1.19)	1.42 (1.08)
CONTROL GROUP	7.4 (0.90)	4.5 (0.75)

**N.B:** Continuous variables are expressed as mean (SD). As NPRS (numeric pain rating scale, 0-10).

The mean pretest pain score and standard deviation of experimental group was 6.64 (1.19) whereas the post test score was 1.42 (1.08). However the pretest pain score and standard deviation of control group was 7.4 (0.90) but the post test score was 4.5 (0.75). The experimental group mean pain score of pie chart showed that there are about (82%-18%) 64% pain reduction during pre and posttest measurement but control group pre and posttest pain score showed in pie chart that expressed (62%-38%) 24% pain reduction. This descriptive analysis showed that experimental treatment is more effective than the controlled intervention for chronic low back pain patients.

**Pre and Post Test combine sample Disability Score:**

	Pre Test Disability	Post Test Disability
<b>Experimental Group</b>	14.06 (5.39)	3.14 (1.29)
<b>Control Group</b>	16.20 (3.82)	8.14 (1.95)

**N.B:** Continuous variables are expressed as mean (SD). As RMDQ (Roland-Morris Disability Questionnaire).

The mean pretest disability score and standard deviation of experimental group was 14.06 (5.39) whereas the post test score was 3.14 (1.29). However the pretest disability score and standard deviation of control group was 16.20 (3.82) but the post test score was 8.14 (1.95). The experimental group mean disability score of pie chart showed that there are about (82%-18%) 64% disability reduction during pre and posttest measurement but control group pre and posttest disability score showed in pie chart that expressed (67%-33%) 34% disability reduction. This descriptive analysis also showed that Region specific SMT is more effective than the non-region specific SMT for chronic low back pain patients.

The study showed as within group analysis that both physiotherapy with or without active rest is effective to reduce pain and back disability for low back pain patient whereas between group results showed that physiotherapy with active rest is significantly effective rather than physiotherapy without active rest for back pain patients. Within group and between group results

showed that the  $P < 0.05$  which mean it's strongly significant and reject the null hypothesis and accept alternative hypothesis. At 23df the height obtainable value of 't' at 5% level of significance is 2.069 as found on reference to 't' table (appendix). The 't' value in this experiment is calculated at 8.65 which is much higher than the height 2.069 obtainable by chance. Thus, the probability of occurrence (P) of the value obtained (8.65) by chance is much less than 0.05, the critical or 5% level of significance 'P' comes to  $< 0.05$  on referring to the 't' table. It can occur less than five times in 100 which means very rarely by chance. So it showed that Region specific SMT is significantly more effective rather than Non Region specific SMT for decreasing pain intensity for the patient with chronic low back pain. So this experiment establishes the hypothesis and rejects the null hypothesis.

The absolute value of the calculated 't' exceeds the critical value (7.9808  $>$  2.069), so the means are significantly different which also means that the 'p' value is less than 0.05 in respect with the 23rd degree of freedom. This calculation showed that Region specific SMT is significantly effective than Non Region specific SMT for the patient with chronic low back pain in sense of pain intensity and disability reduction. However it also proved that both group of intervention was effective though experimental group interventions was more effective than the control group.

**Limitations:** It was very difficult to blind here so that not possible to blind the therapist and participants due to the nature of the interventions which does not ensure that it would not be bias.

**Conclusion and Recommendations:** Low Back Pain is one of the common musculoskeletal problems which usually treated by physiotherapy including manual therapy and electrotherapy with or without analgesics types of medication conservatively and sometimes it may require surgical intervention for the patients with sequestrated disc. There is lot of physiotherapy intervention used for low back pain management where spinal manual therapy is the choice of treatment suggested by different research studies. Specialized manual physiotherapists are usually used manual therapy which can be with or without following the active rest. If it would get more beneficial result with physiotherapy with active rest then it would decrease treatment time and costs that would increase authenticity of treatment. This study showed that both group of intervention are effective for the management of chronic low back pain whereas the physiotherapy with active rest is significantly more effective for the

management of low back pain rather than Physiotherapy without active rest. Regarding this study it was seen pre and posttest pain intensity and disability due to low back pain which showed that both pain and disability has been decreased significantly. Further longitudinal study with or without placebo group is required for the strong validity of long term effects of this treatment.

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