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Rationality and outcome of activity related treatment approach in the management of non-specific low back pain in young adults

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Abstract
Background: The occurrence of Non-specific low back pain is very common. 15% to 30% of the Young adults develop this condition. Some Orthopaedic surgeons commonly prescribe bed rest for Non-specific low back pain along with short term medication. On the other hand some Orthopaedic surgeons prescribe physical therapy and some prefer ordinary activity along with short term medication. Controversy persists over the most effective modality of treatment because of lack of evidence that any one of these modality of treatment is always effective. Aim of this study is to find out the most effective treatment approach for patients with Non-specific low back pain.
Methods: The study is a retrospective, comparative, parallel group study, with three intervention groups. The study was done at our Institute during April 2016- July 2017. Patients of age between 21 to 45 Years presented with low back pain of less than 3 weeks duration with no history of trauma and no positive clinical findings were included in the study. Patients with neurologic signs, spondylolisthesis, and history of trauma, fever, weight loss, patients who received corticosteroid therapy, patients who had previous back surgery, pregnant females with low back pain and patients with other systemic disorder were excluded from the study. Patients who received bed rest for 3 days along with short term medication were labelled as Group A. Patients who received physical therapy with short term medication were labelled as Group B and Patients who received treatment according to the activity/work demands of the patient were labelled as Group C. Data on outcomes were collected during follow-up in outpatient department or on telephone. Outcomes of all patients were assessed at 1 month, 2 months and 3 months after completion of treatment. The assessment of outcome was focused on the effect of each modality of treatment on pain relief as measured on Visual Analogue Scale (VAS Score), the level of function and number of sick days.
Results: We included 216 adult patients diagnosed as Non-specific low back pain fulfilling the inclusion criteria. Group A consisted of 69 patients who were treated with bed rest for 3 days and short term medication. Group B consisted of 73 patients who were treated with physical therapy and short term medication. Group C consisted of 74 patients who received treatment according to their activity/work demand. As compared with the patients in Group A and B, the Group C patients recovered significantly better in terms of VAS Score for pain, level of Function, the number of sick days. The median number of sick days was Seven in Group A and B Patients as against Five in Group C Patients. A statistical analysis was carried out using the SPSS software package.
Conclusion: Our study results demonstrates that heavy manual labourers, sportsmen and military/police recruits with Non-specific low back pain respond better and earlier to 3 days of bed rest and short term medication as compared to physical therapy and short term medication. On the other hand office workers and those with light work responded better and earlier to physical therapy and short term medication. Hence Activity related treatment approach seems Rationale and leads to early functional recovery and less number of sick days.

Keywords: Non-specific low back pain, young adults

Introduction
Non-specific low back pain is the most common presentation in everyday orthopaedic outpatient department. It is one of the commonest causes of absenteeism from work.[1, 2, 3] 15% to 30% of the Young adults develop this condition. [4, 5, 6] Non-specific low back pain may be defined as pain of less than 12 weeks duration with no positive clinical findings and without any identifiable cause.[7] Serious pathologies are rare in these cases.
Some Orthopaedic surgeons commonly prescribe bed rest for Non-specific low back pain along with short term medication. On the other hand some Orthopaedic surgeons prescribe physical therapy and some prefer ordinary activity along with short term medication [8].

Controversy persists over the most effective modality of treatment because of lack of evidence that any one of these modality of treatment is always effective [9, 10]. Therefore it is not reasonable to expect every patient with Non-specific low back pain to benefit from any single treatment approach. Attempts to classify patients with Non-specific low back pain based on etio-pathogenesis is not possible as there is no definite cause or underlying pathogenesis for its development.[2, 6] Therefore, attempting to identify a modality of treatment according to symptoms and work demands of every individual patient may be successful. Aim of this study is to evaluate the effectiveness of such approach in treating patients with Non-specific low back pain.

Materials and methods

The study is a retrospective, comparative, parallel group study, with three intervention groups. The study was done at our Institute during April 2016- July 2017. The study was approved by the Institutional Review Board. The study was performed according to the guidelines and ethical standards of the Helsinki Declaration. Patients of age between 21 to 45 Years presented with low back pain of less than 3 weeks duration with no history of trauma and no positive clinical findings were included in the study. Patients with neurologic signs, spondylolisthesis, and history of trauma, fever, weight loss, patients who received corticosteroid therapy, patients who had previous back surgery, pregnant females with low back pain and patients with other systemic disorder were excluded from the study.

Detailed clinical history and examination findings were assessed as per following sequence:

- Demographic characteristics: Age, gender, height and weight.
- Nature of job: sedentary / heavy manual labourer.
- Site of tenderness.
- Straight-leg raising and lumbar flexion were measured.
- Response to the treatment, VAS score at each visit, any recurrence of symptoms and further progress of patient's condition.

Patients who received bed rest for 3 days along with short term medication were labelled as Group A. Patients who received physical therapy with short term medication were labelled as Group B and Patients who received treatment according to the activity/work demands of the patient were labelled as Group C. Group C patients received treatment based on type of work and presence or absence of stiffness. Heavy manual labourers presenting with Non-specific low back pain along with stiffness received Bed Rest and short term medication. Patients with office work received treatment in the form of short term medication and physical therapy. These patients were allowed to do ordinary activity.

Data on outcomes were collected during follow-up in outpatient department or on telephone. Outcomes of all patients were assessed at 1 month, 2 months and 3 months after completion of treatment. The assessment of outcome was focused on the effect of each modality of treatment on pain relief as measured on Visual Analogue Scale (VAS Score), number of sick days and the level of function.

Results

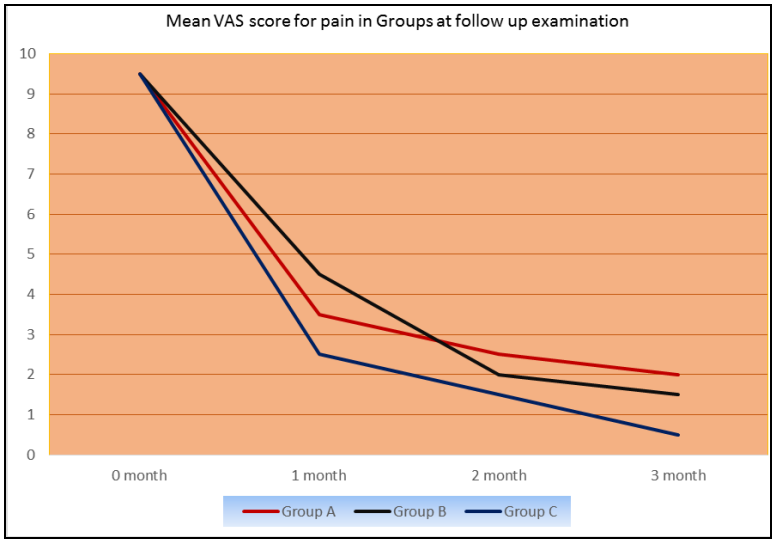
We included 216 adult patients diagnosed as Non-specific low back pain fulfilling the inclusion criteria. 112 were males and 104 were females. Mean age of these patients was 34.3 years. They were divided into three groups according to the treatment received by them.

Group A consisted of 69 patients who were treated with bed rest for 3 days and short term medication. Group B consisted of 73 patients who were treated with physical therapy and short term medication. Group C consisted of 74 patients who received treatment according to their activity/work demand. The base line characteristics of the Patients in all the three groups were comparable. Outcome of all patients were assessed on 1 week, 2 week, 3 week, 4, 6, 8, 10 and 12 weeks.

Table 1: Comparison of patient characteristics in three groups.

Characteristics	Group A n= 69	Group B n= 73	Group Cn= 74
Males	36	37	34
Females	33	36	40
Mean VAS Score for pain at the start of Treatment	9.5	9.5	9.5
Stiffness present	51	57	60
Stiffness absent	18	16	14
Individuals performing heavy work	42	39	41
Office workers	27	34	33

At follow up examination after 1 week 57, 59 and 68 patients in the Groups A, B and C respectively were recovered completely and they were doing their routine work. 12, 14, and 6 patients in the Groups A, B and C respectively were out of work due to pain. At two weeks 6, 7, and 3 patients in the Groups A, B and C respectively were out of work due to pain. Antero-posterior and Lateral lumbosacral Radiographs were done of these patients after 2 weeks. Out of 6 patients in Group A who were having pain after two weeks of treatment, 4 patients Radiographs showed early degenerative changes and in 2 patients Radiographs were normal. 7 patients in Group B who were having pain after two weeks of treatment, 3 patients Radiographs showed early degenerative changes, 2 patients Radiographs showed sacralisation of 5th lumbar vertebra and in 2 patients Radiographs were normal. 3 patients in Group C who were having pain after two weeks of treatment, Radiographs showed early degenerative changes in all 3 patients. At three weeks follow up examination 1, 2 and 0 patients in the Groups A, B and C respectively were out of work due to pain. At 12-Week all patients in Groups A, B and C were asymptomatic. The median number of sick days was Seven in Group A and B Patients as against Five in Group C Patients. At the start of treatment mean VAS score for pain was 9.5 in all three groups. At 1 month follow up after treatment it was 3.5, 4.5 and 2.5 in Groups A, B and C patients respectively. At 2 month follow up after treatment VAS score was 2.5, 2 and 1.5 in Groups A, B and C patients respectively. At 3 month follow up after treatment it was 2, 1.5 and 0.5 in Groups A, B and C patients respectively.



A statistical analysis was carried out using the SPSS software package (SAS Institute, USA). Pearson's Chi-square test, Fisher's exact probability test was used for statistical evaluation. Comparison was carried out between groups A&B, A&C, B&C. A p value < 0.05 was considered to be significant. The odds ratios (OR) and 95% confidence intervals (CI) were added, if p values were less than 0.05. Group C Patients showed statistically significant difference over other groups in terms of duration of recovery, absentees from work and ability to work.

Discussion

Non-specific low back pain may be defined as pain of less than 12 weeks duration with no positive clinical findings and without any identifiable cause.[7] serious pathologies are rare in these cases. Non-specific low back pain is equally common in all types of working adults such as office workers, technical staff working in factories, sales representatives, military/police recruits, house wives, sportsmen and heavy manual labourers. It is very important to successfully treat low back pain during early phase as inappropriate treatment leads to recurrent episodes of low back pain and/or chronic low back pain causing Personal and National loss to economy and health in terms of diagnostics, treatment and absenteeism from work.[11] Etiological factors for development of low back pain of short duration without positive clinical findings (Non-specific low back pain) are -

1. Bad posture during office work.
2. Poor Ergonomic principles during work.
3. Mechanical overburdening ass seen in heavy manual labours.

Various modalities of treatment such as Bed rest with short term medication, Physical therapy with short term medication, Ordinary activity with short term medication have been described in the literature for treating non-specific low back pain in adults.[11] All these modalities have favourable outcome on symptoms and function. All these patients are expected to recover as there is no underlying pathology involved in development of non-specific low back pain. However duration for recovery and subsequent visits for back pain varies with different modalities of treatment. Possible causes of these may be different symptoms and different work demands of different patients of Non-specific low back pain. Some patients have stiffness and some don't. Similarly work demands of the patients also varies from office workers to heavy manual labourers. Therefore all these patients of Non-specific low back pain do not respond to any single modality of treatment in the same way. Therefore we need to design treatment which consider symptoms and work demands of these patients.

Our study results shows that, the Group C patients recovered significantly better in terms of VAS Score for pain, level of Function, the number of sick days as compared to Group A and Group B patients. During this study we found that heavy manual labourers, sportsmen and military/police recruits respond better and earlier to 3 days of bed rest and short term medication as compared to physical therapy and short term medication. On the other hand office workers and those with light work responded better and earlier to physical therapy and short term medication. Other rigorous studies comparing outcome of different modalities of treatment for Non-specific low back pain also concluded that treatment should depend on signs, symptoms and work pattern of the patient for early recovary. [12, 13]

Conclusion

Our study results demonstrates that heavy manual labourers, sportsmen and military/police recruits with Non-specific low back pain respond better and earlier to 3 days of bed rest and short term medication as compared to physical therapy and short term medication. On the other hand office workers and those with light work responded better and earlier to physical therapy and short term medication. Hence Activity related treatment approach seems Rationale and leads to early functional recovery and less number of sick days.

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