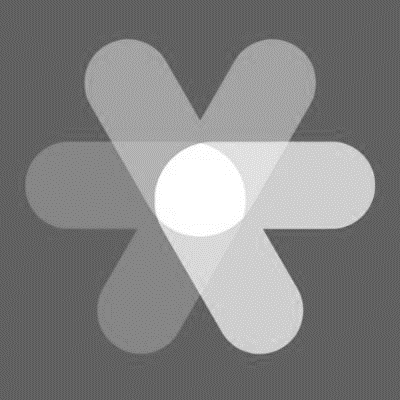
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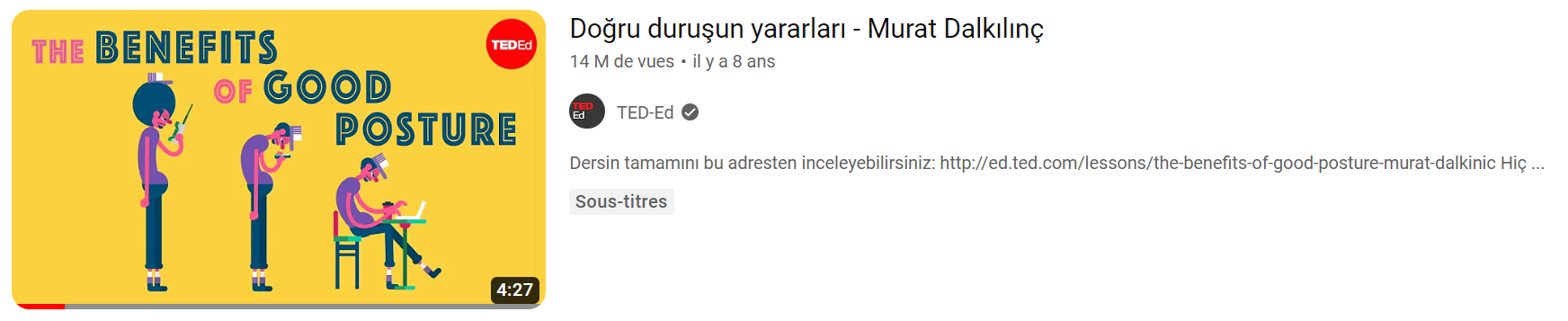
BINV2120-1

BURNY Pauline

Léonard De Vinci University-College (English Language)

[**LISTENING**](https://www.youtube.com/watch?v=OyK0oE5rwFY)

*UNIT 6: Ergonomics*



What are the possible « stresses » mentioned in the video?

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

What happens if you’re not in a good posture?

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

What are the risks?

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

Apart from muscles and organs, what can be influenced by posture?

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

What does good posture look like? (from the front/side)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

What is the best posture when sitting?

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

How can you adapt your environment to improve your posture?

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

**VOCABULARY**

**Match each sentence with the right word.**

|  |  |
| --- | --- |
| 1. Ergonomics 2. Carpal Tunnel Syndrome 3. Musculoskeletal Disorders 4. Repetitive Strain Injuries 5. Keyboard Tray 6. Mouse Pad 7. Footrest 8. Monitor height | 1. Posture 2. Breaks 3. Ergonomic chair 4. Neutral position 5. Lighting 6. Workstation 7. Eye strain |

|  |  |
| --- | --- |
| **Letter** | Definition |
|  | The science of designing workspaces and products to improve efficiency and reduce discomfort. |
|  | The way you hold your body while sitting, standing, or working, which can impact health and comfort. |
|  | Injuries and discomfort that affect the muscles, bones, and joints due to poor ergonomics. |
|  | A natural and balanced posture that reduces strain on the body during activities. |
|  | Injuries caused by repeating the same motions over and over, often resulting in pain and discomfort. |
|  | Adjusting the computer screen level to align with your eyes for optimal viewing. |
|  | A sliding shelf under the desk that holds the keyboard at a comfortable height for typing. |
|  | Taking short pauses during work to stretch, rest your eyes, and prevent strain. |
|  | A chair designed to support posture and provide comfort during long periods of sitting. |
|  | Discomfort in the eyes caused by prolonged staring at screens or improper lighting. |
|  | A small platform under the desk to support the feet and maintain proper leg posture. |
|  | The area where you work, including your desk, chair, computer, and other tools. |
|  | Proper illumination of the workspace to reduce eye strain and enhance visibility. |
|  | A type of RSI affecting the wrist and hand due to repetitive movements. |
|  | A cushioned surface that provides a comfortable area to move the computer mouse. |

**VOCABULARY**

|  |  |
| --- | --- |
| 1. Ergonomically designed mouse 2. Static posture 3. Keyboard tray 4. Health and well-being 5. Muscle stiffness 6. Neck strain 7. Back support 8. Joints | 1. Efficiency 2. Work environment 3. Height and tilt 4. Eye strain 5. Repetitive strain injuries 6. Workstation layout 7. Alleviate |

**Match each sentence with the right word.**

* Ergonomics is the study of designing products and workspaces to enhance ................ and user comfort.
* Poor posture while working at a computer can lead to musculoskeletal disorders (MSDs), causing discomfort in your muscles, bones, and ................
* To reduce ..............., it's important to adjust the monitor height so that the screen is at eye level.
* An ergonomic chair supports your body's natural alignment and provides proper ............... to prevent discomfort.
* Taking frequent breaks during computer work helps prevent ............... and allows your body to relax.
* A ............... can help maintain a neutral wrist position while typing, reducing the risk of developing carpal tunnel syndrome.
* Proper lighting is crucial to avoid visual fatigue and ensure a comfortable ...............
* A footrest can ............... pressure on your feet and promote better blood circulation during long periods of sitting.
* Your ............... should be organized to minimize excessive reaching and encourage efficient workflow.
* Maintaining a neutral head position while using electronic devices can prevent ............... and discomfort.
* Implementing ergonomic practices in your daily routine can contribute to better overall ...............
* Regular stretching and movement breaks can help prevent ............... and fatigue during long work hours.
* An ............... can reduce stress on your wrist and improve your pointing accuracy.
* Avoiding prolonged periods of ............... and incorporating dynamic movements can help prevent body discomfort.
* Adjusting your chair's ............... can ensure proper alignment of your spine and promote a comfortable sitting position.

**READING**

Background:

Low back pain is a very common phenomenon in computer users. More than 80% people using computers for more than 4 h complain of back pain.

Objective:

To compare the effectiveness of multidisciplinary treatment approach and conventional treatment approach amongst computer users.

Materials and Methods:

A prospective interventional study was carried out at a private spine clinic amongst the computer users with the complaint of low back pain. The study participants were randomly distributed in two groups. The first group comprised the study participants treated by conventional approach and the second group was treated by multidisciplinary approach. Primary outcomes analyzed were pain intensity, sick leave availed, and quality of life. Statistical analysis was done using proportions, unpaired “*t*” test, and Wilcoxon signed-rank test.

Results:

Totally 44 study participants were randomly assigned to groups I and II, and each group had 22 study participants. Intensity of pain was reduced significantly in the group treated by multidisciplinary approach (*t* = 5.718; *P* = 0.0001). Similarly only 4 (19.19%) of the study participants of the group treated by multidisciplinary approach availed sick leave due to low back pain, while 14 (63.63%) study participants availed sick leave in the other group (*P* = 0.02). The quality of life amongst the study participants treated by multidisciplinary approach was significantly improved compared to the group treated by conventional approach (*t* = 7.037; *P* = 0.0001).

* Une étude interventionnelle prospective - ………………………………
* Une clinique privée - ………………………………
* La colonne vertébrale - ………………………………
* Les douleurs lombaires - ………………………………
* L’intensité de la douleur - ………………………………
* Un congé maladie - ………………………………
* Etre réduit de manière significative - ………………………………
* Améliorer - Amélioré - ………………………………

Conclusion and Recommendation:

The multidisciplinary treatment approach was better than the conventional treatment approach in low back pain cases when some factors like pain and quality of life were assessed. The multidisciplinary approach for treatment of low back pain should be promoted over conventional approach. Larger studies are required to confirm the findings in different settings.

INTRODUCTION

Low back pain is a very common condition, with about 90% of people suffering from it at some point in their lives. In many countries, chronic low back pain is the most common cause of long-term disability in middle age. Low back pain is a major health problem, not only because of the high prevalence and incidence of low back problems but also because of the important consequences which are disability, the use of health services, sickness absence, and early retirement. Back pain also accounts for many lost working days.

Computer work has generated a new genre of occupational health problems, i.e., of computer-related problems. Postural back pain is a major public and occupational health problem, especially in the information technology (IT) and BPO sectors. In India, the occupational health personnel is slowly awakening to this group of modern occupational diseases, which are slowly taking their roots among the IT professionals. These problems, if ignored, can prove debilitating and cause crippling injuries, forcing one to change their profession.

According to Borenstein, low back pain should be viewed as a medical disorder, with the goal being to return to regular physical activity as quickly as possible and to enable the patient to receive the most beneficial care at optimal times.

There is no established protocol or model which a back pain sufferer goes through after having a first episode of back pain. Acute back pain seems to respond well to simple treatment measures, although there is a lot of variation in the benefit for individual patients.

Clinical trials have shown that psychosocial factors have an important influence on the prognosis of low back pain. They display more predictive power in the course of the sickness than biomedical variables. Studies conducted have shown moderate evidence that multidisciplinary (biopsychosocial) treatments are superior to biomedical treatment in the improvement of pain, functional status, and time to return to work, and the long-term effects of psychologic interventions have been discussed controversially.

This study was conducted with an objective of comparing the effectiveness of multidisciplinary treatment approach with conventional treatment approach amongst computer users.

* La douleur lombaire : ………………………………
* La qualité de vie : ………………………………
* Une étude clinique : ………………………………
* Un facteur psychosocial : ………………………………
* Protocole établi : ………………………………
* Un épisode de douleur aiguë : ………………………………
* Un retour à l'activité physique régulière : ………………………………
* Une étude plus vaste : ………………………………
* Le pronostic : ………………………………
* Le retour au travail : ………………………………
* Les effets à long terme : ………………………………
* Les maladies professionnelles modernes : ………………………………

MATERIALS AND METHODS

A prospective interventional study was conducted at a private setup. The criteria for selection of the study participants were formulated. The criteria were as follows.

Inclusion criteria

* Postural low back pain
* Computer work > 8 h/day for 5 days

Exclusion criteria

* History or presence of radicular pain
* Specific physical condition such as nucleus pulposus prolapse, tumor, spondylolisthesis, spinal stenosis, or cauda equine syndrome
* Red flags according to the current guidelines of back pain, including history and presence of inflammation, tumor, trauma, and neurological deficits ruled out by clinical, radiological, or laboratory examination
* Systemic diseases like rheumatoid arthritis, Crohn's disease, diabetes mellitus, cancer, or psychiatric disease

Clinical interventions

The interventions were based on outpatient rehabilitation programs in both groups with respect to dosage and contents. A total of 44 patients participated in the study. They were randomly distributed in two groups equally, i.e., 22 in each.

Group I included study participants to be treated by conventional treatment approach. The conventional treatment approach comprised orthopedics consultation and physical therapy.

Group II included study participants to be treated by multidisciplinary treatment approach which included combination of orthopedic consultation, physiotherapy, ergonomics, vitamin supplementation, diet plan, massage therapy, and stress management.

Study participants and assessors were blinded about the groups and therapy. The study was done over a period of 4 weeks.

Each patient received approximately 2 h of daily treatment for 15 days in 3 weeks.

The follow-up of all study participants was done after 1 year.

* L’intervention clinique - ………………………………
* Le dosage - ………………………………
* Le contenu - ………………………………
* Participer à une étude - ………………………………
* L’approche de traitement conventionnelle - ………………………………
* La kiné rééducative - ………………………………
* C’est-à-dire – ………………………………
* Une approche de traitement multidisciplinaire - ………………………………
* L’ergonomie - ………………………………
* Être traité au moyen de (+traitement) - ………………………………
* La supplémentation en vitamines - ………………………………
* Le plan alimentaire - ………………………………
* La massothérapie - ………………………………
* La gestion du stress - ………………………………
* Sur une durée de +temps - ………………………………
* Le suivi - ………………………………

Primary outcomes

Intensity of pain was assessed by Pain Questionnaire (McGill Pain Questionnaire). It is based on the view of pain perception as affective and cognitive-evaluative.

Leave register from office – It details the number of days of leave 3 months before and 3 months after the treatment. The leave taken for reasons other than back pain was excluded.

Quality of life measured by SF-36. The 12 items provide a representative 3) sampling of the content of the eight health concepts and operational definitions of those concepts, including what respondents are able to do, how they feel, and how they evaluate their health status.

Statistical analysis

The statistical analysis was done by using statistical software programs Primer of Biostatistics and Epi Info. Appropriate statistical tests like proportions, unpaired “*t*” test, and Wilcoxon signed-rank test were applied.

Ethical aspects

The study was conducted according to the guidelines of the Helsinki Declaration and of Good Clinical Research Practice. The research study was approved by an independent ethical committee. All the study participants were told about the nature and outcome of study and written informed consent was taken.

RESULTS

The total number of study participants was 44. Each group had 22 participants.

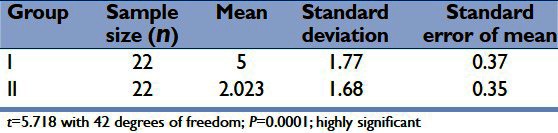
Intensity of pain assessed by Pain Questionnaire, as mentioned in the section Materials and Methods, is given in [Table 1](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3669474/table/T1/) and [Figure 1](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3669474/figure/F1/). The multidisciplinary treatment approach is found to be better than traditional treatment approach.

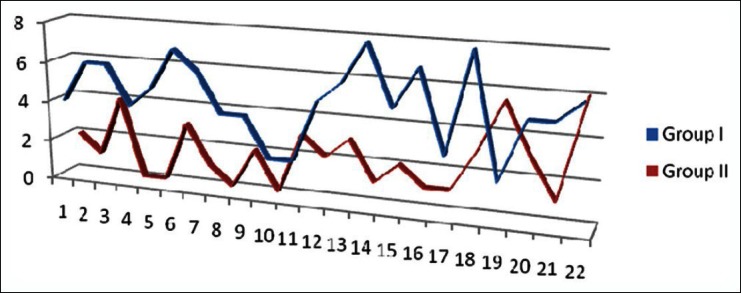
* La principale retombée - ………………………………
* Évaluer la douleur - ………………………………
* Le questionnaire de douleur McGill - ………………………………
* Le registre des congés du bureau - ………………………………
* La qualité de vie - ………………………………
* Les proportions - ………………………………
* Un comité éthique - ………………………………

Top of Form

**Table 1**

Comparison of pain intensity on visual analog score



[[](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3669474/figure/F1/)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3669474/figure/F1/" \t "figure)

Pain intensity on visual analogue scores

The number of days of sick leave availed due to low back pain during the year was also assessed. In the group treated with traditional approach, 14 (63.63%) participants availed leave due to low back pain, while in the group treated with multidisciplinary approach, only 4 (18.18%) participants availed leave for the same reason.

For the number of days of leave taken, the statistical analysis was done by using Wilcoxon signed-ranked test (w = 96, *P* = 0.02; significant).

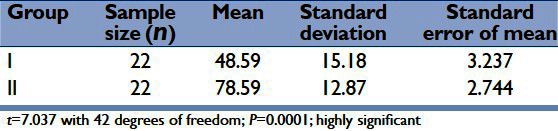
The number of days of leave taken in those treated by multidisciplinary approach was significantly less than that taken by those who were treated by traditional approach.

The analysis of the “SF-36 Health Survey” is designed to examine a person's perceived health status. As per [Table 2](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3669474/table/T2/), the SF-36 Health Survey scores were significantly higher in the group treated by multidisciplinary approach than the group treated by traditional approach. This shows that perceived health status was better in the group which was treated by multidisciplinary approach.

* L’intensité de la douleur - ………………………………
* Être dû à - ………………………………
* De manière significative - ………………………………

**Table 2**

Comparison of perceived health status on SF-36® health survey



**DISCUSSION**

Postural low back pain is a major public and occupational health problem, especially in the IT and BPO sectors. Eight out of ten people working more than 8 h in front of computers have back pain. Although medical costs for back pain are high, hidden costs like absenteeism and reduced productivity are significant. Early identification of clinical, psychosocial, and professional risk factors is important to prevent the progression to chronic low back pain.

There is no established protocol or model which a back pain sufferer goes through after having a first episode of back pain. A general physician or an allied health professional is the first point of contact in such cases. After the initial screening, painkillers are often prescribed and only a few times specialist consultation is sought. Conventional treatment which usually includes orthopedic consultation and physical therapy is the preferred choice of treatment when pain and discomfort during work increases at a secondary or tertiary care unit. Many different rehabilitation programs of unclear efficacy are currently in use. Multidisciplinary treatment approaches including biopsychosocial rehabilitation are scarcely practiced treatment methods in India. There is strong evidence that intensive multidisciplinary biopsychosocial rehabilitation with functional restoration improves function in chronic and nonspecific back pain. The flaw in most rehabilitation approaches is that they are unidirectional and involve only the physical aspect of rehabilitation.

In our study, we compared the multidisciplinary treatment approach with the conventional treatment approach for the low back pain. We found that multidisciplinary treatment approach was better than conventional treatment approach when certain outcomes like intensity of pain, number of sick leave availed due to low back pain, and perceived health status were considered.

The randomized trial conducted by Moffett *et al*. revealed the superiority of combined exercise and behavioral treatment in primary care management, and they concluded that rather than the intensity of pain, the ability to cope was improved. Nicholas *et al*. reported superior improvement in patients with chronic low back pain after a combined psychological and physiotherapeutic treatment over those treated by exercise and discussion sessions. Turner *et al*. in a randomized trial compared behavioral treatment, exercise, and a combination of both in an outpatient and a group setting for back patients mostly not in sick leave; whilst short-term effects were superior after the combination therapy, all significant differences disappeared after 6 months due to small sample sizes. A systematic review concluded that a high dose, biopsychosocial therapy improves function and pain considerably compared to biomedical therapy; in terms of sick leave, their conclusions were contradictory.

To conclude, this study supports the evidence that the multidisciplinary treatment approach in low back pain is a better option over the conventional treatment approach. Larger studies, especially randomized controlled trials, are recommended to confirm the evidence in Indian scenario.

* La douleur lombaire posturale - ………………………………
* L’absentéisme - ………………………………
* La productivité réduite - ………………………………
* La douleur chronique - ………………………………
* Les coûts attribués/alloués à … - ………………………………
* Subir / traverser - ………………………………
* Une progression vers - ………………………………
* Une évaluation des symptômes - ………………………………
* Le choix de traitement favorisé - ………………………………
* A peine - ………………………………
* Preuve - ………………………………

**What did you understand? Answer using your own words.**

The study was conducted with a comparatively smaller sample size.

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

Which group had the best results in terms of pain relief?

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

If not treated/assessed, what can low back problems lead to?

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

What did the conventional treatment include?

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What did the multidisciplinary treatment include?

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Which group had the highest number of days of sick leave?

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

What is the problem with most rehabilitation approaches? What is their flaw?

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………