ESP-JETA
ESP Journal of Engineering & Technology Advancements
ISSN: 2583-2646 / Volume 4 Issue 4 December 2024 / Page No: 166-171
Paper Id: JETA-V4I4P122 / Doi: 10.56472/25832646/JETA-V4I4P122

Original Article

Effectiveness of Non-Surgical Treatments for Chronic Back Pain: Physical Therapy Treatment

Laljibhai Makwana
Independent Researcher, USA.

Received Date: 03 October 2024 Revised Date: 13 November 2024 Accepted Date: 05 December 2024

Abstract: *Chronic back pain is a widespread problem that affects many people's lives by limiting their ability to move and causing constant discomfort, while surgery is also an option for severe cases, non-surgical treatments, particularly physical therapy, have proven effective for managing pain and improving quality of life. Physical therapy helps to reduce pain, improve te movement, and strengthen muscles through targeted exercises, manual therapy, and education, and so it gives long-term benefits by addressing the root causes of pain and teaching patients how to prevent future issues. This paper explores how physical therapy works as a reliable, non-surgical treatment for chronic back pain and highlights its importance in helping individuals regain function and lead a more active, pain-free life, and the goal is to basically show why the physical therapy should be considered a top choice for non-surgical back pain relief.*

Keywords: *Chronic Back Pain, Physical Therapy, Non-Surgical Treatments, Pain Management, Rehabilitation.*

I. INTRODUCTION

Chronic back pain is a common and serious problem that affects millions of people around the world, and it is defined as pain that lasts for 12 weeks or longer, even after the initial cause of the pain has been treated, and so this type of pain can interfere with daily life, making it hard to work, exercise, or even perform basic activities like walking or sitting comfortably. Chronic back pain can come from different causes, just liek the muscle or ligament strain, herniated discs, arthritis, or poor posture. While surgery is sometimes an option for treatment, as the most people prefer non-surgical methods because they are less risky, less invasive, and often more cost-effective. Physical therapy is considered one of the most efficient and widely used non surgical ways of dealing with chronic back pain. Physical therapy is a healthcare treatment modality that addresses the treatment of pain and functional limitations by teaching patients or clients specific exercises and providing education. This treatment can also be tailored for every affected individual, and hence this makes it a reliable treatment for many people with back pain. Therapeutic exercise has an impact on muscles and joints which support the spine. This can include certain exercises that help to tone up the muscles of the stomach which in turn supports the back thus reducing the pain. Flexibility exercises such as stretching allows the muscles to become more relaxed and less tight and the application of manual therapy such as massage and joint mobilization allows for more movement of the joint and therefore less stiffness. In addition to exercises, physical therapists educate patients on strategies for positioning the body during sitting or standing and during movement to minimize pain.

A. Understanding Chronic Back Pain:

Chronic back pain is a type of pain that is localized in the lower, middle, or upper back and persists for up to 12 weeks or more after the original injury has been treated, and so this type of pain may be described as complex, implying that its origins may be multiple and not limited to one single cause, like for example, muscle or ligament strain, herniated discs, and spinal disorders including arthritis are examples of conditions that may lead to the onset of this pain [2]. Some of the other causes include bad posture, little or no activity, or injuries that have not healed well [3]. This is because chronic back pain is not only a physical condition but can also be affected by some psychological and social factors. Stress, anxiety, and depression have been reported to either cause back pain or exacerbate it whenever present, and so this link between the physical and psychological status opens up a cycle whereby pain instigates distress and that in turn magnifies the pain making treatment challenging [2]. Chronic back pain not only entails mere physical suffering, but also has other impacts. Patients with chronic back pain have restricted movements and thus cannot attend to their jobs or engage in exercise or favorite activities, and so this can results to reduced life quality and in some cases disability, and then also the chronic back pain is costly in terms of medical expenses, loss of work, and poor operability [1]. Chronic back pain is not easy to treat and can take months, and sometimes even years to manage compared to acute back pain that can be relieved within a few weeks with little intervention, so these treatments basicllay involve physiotherapy, changes in behavior and, in some cases, psychiatric help to cope with pain's psychological aspect, and so to manage chronic back pain, it is crucial to comprehend its various dimensions, as it has a significant impact on a patient's health [4].

Physical therapy entails specific, effective components for the management of chronic back pain: the augmentation of the strength of specific muscles, including the spine, the facilitation of correct postural alignment, as well as the proper training of the patient with regard to spinal health. This interventional therapy is designed to interrupt the vicious cycle of pain and enables the patients to regain functional capacity [5].

II. EFFECTIVENESS OF PHYSICAL THERAPY FOR CHRONIC BACK PAIN

Back pain is a long-term ailment that really affects a person's quality of life due to the persistent pain and restricted physical activity. Although there are surgical solutions, most patients and other practitioners opt for non-surgical approaches as they have fewer side effects, less expensive and as they support overall recovery. Physical therapy has also been ranked among the most successful non-invasive management strategies for chronic back pain [1]. This method includes gentle exercises, maintaining proper posture, handling methods, and other treatments that help ease the pain, enhance the use of the muscles, and avoid additional injuries.

A. Exercise and Movement-Based Therapy

Physical activity is one of the most important parts of patients' physical therapy and is a crucial element in the treatment of chronic back pain. Movement-based therapy entails certain activities that aim at helping the muscles around the spine, improve flexibility as well as movement. Strengthening exercises that focus on the abdominal muscles are particularly important because they help support the spine and alleviate pressure on the lower back [2]. Stretching exercises, in contrast, assist in relaxing the back muscles and reducing the stiffness and pain as well as enhancing the flexibility of muscles.

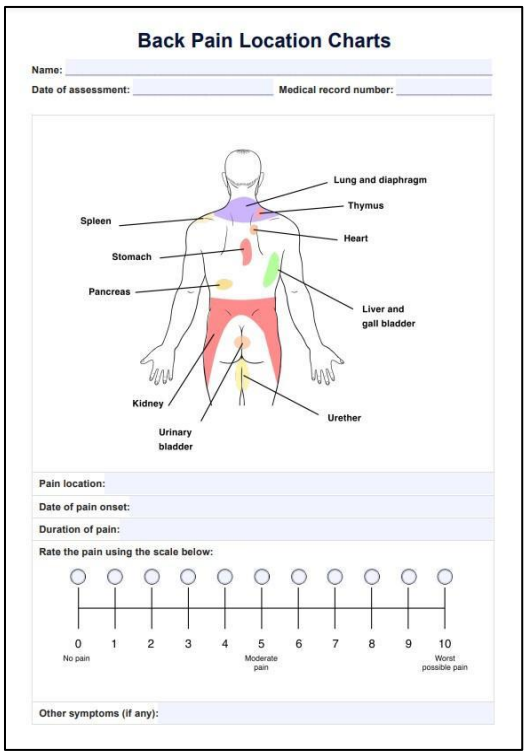

Figure 1: Back Pain Location Chart

Regular exercise not only do improves physical function but also contributes to pain relief by promoting better blood circulation and releasing endorphins, which act as natural painkillers, so the Consistent movement-based therapy helps build resilience over time, enabling the patients to return to their daily activities with greater ease and reduced pain.

B. Posture Training

Evidently, posture shows an intricate correlation with the progression and treatment of chronic back pain. Abnormal position of the bones or nerves when seated for many hours or standing incorrectly also exerts pressure on the spine and causes the pain to be constant [4]. Another common feature of physical therapy is the training of proper posture, which may be included into the therapy program. Psychologists explain to the patient how one has to sit, get up, or walk in such a way that pressure should not be exerted on the spine. During the development of the exercise program, patients are also taught how to assume the correct position while sitting, standing, or lifting something. This training assists in correcting the improper alignment of the spine and correct distribution of body weight so as to ease muscle fatigue and pains. Proper posture is also essential in preventing a repeat of the back pain because it reduces possibility of reinjury [1].

C. Manual Therapy

Manual therapy is a physical approach that physical therapists use to address pain and promote movement. It entails massaging muscles and joints with certain force in order to relieve stiffened muscles, facilitate circulation of blood and get rid of accumulated tension. Therapies like massage, joint mobilization, and manipulation help to lessen the severity of pain and discomfort the patient might be experiencing in order to ease movement [5]. Some of it patients feels better even in the first session of the manual therapy while the permanent relief comes from the combination of manual therapy and exercises which involve strengthening and stretching of muscles [2]. This is helpful when addressing cases of spasm or a problem in the muscles or joints that can cause back pain. Its major benefit is in the applicability of therapeutic techniques and the extent of the therapist's knowledge about how the body works..

Figure 2: Low Back Pain Exercises

D. Heat and Cold Therapy

Both heat and cold therapy are safe and easily implemented methods that are applied within physical therapy programs for the treatment of chronic back pain. Heat therapy relaxes muscles that have been contracted through the process of increasing blood supply to the region where it is applied. With a warm compress or heating pad, you may get near-instant relief and loosen up the muscles before doing any exercises or stretches [3]. Cold therapy or cryotherapy entails using ice packs in the painful area. This inhibits inflammation and provides a form of analgesia to irritated tissues for some time [4]. It is particularly important to apply cold therapy after physical activity or exercise to reduce the inflammation and pain that occur due to the elevated muscle temperature. Hot and cold therapies are usually applied together because heat helps in stretching or warming the muscles before use while cold gives a soothing effect after use.

E. Innovative Technologies in Physical Therapy

This has led to development of new methods through which physical therapy for chronic back pain can be improved through technological innovations. New techniques like use of ultrasound therapy and electrical stimulation are being integrated to enhance the results. Ultrasound therapy comprises the use of sound waves that produce heat at the deeper layer of the muscles to heal and also reduce pain [1]. Muscular strength, as well as inflammation and muscle spasms, can be combatted effectively through this therapy. TENS (Transcutaneous Electrical Nerve Stimulation) uses electrical energy to stimulate the nerves, although the current is not very strong. This is helpful in interrupting transmission of pain signals to the brain thus offering comfort to the chronic pain sufferers. Technological applications do not only enrich the set of therapeutic interventions, but they also enhance the overall therapy efficacy and, consequently, the patients' access to it.

F. Lifestyle and Behavioral Modifications

Lifestyle and behavioral changes are an essential part of any comprehensive physical therapy plan for chronic back pain, and then also the Physical therapists also do encourage patients to make adjustments to their daily habits to support their recovery and prevent future pai m,a nd so this can include simple changes like taking frequent breaks when sitting for long periods, using ergonomic furniture, and incorporating gentle stretching into the day. Other behaviour changes may also include stress management interventions since increased stress puts stress on muscles and worsens the pain. Activities like meditation, controlling breath, and muscle relaxation are good in the reduction of stress and in the maintenance of health [3]. Abnormal weight is also discouraged by physical therapists as it is one of the causes of disabilities. Obesity raises stress in the spinal column due to the increased mass that adds pressure in cases of chronic back ache. Stating that through

exercising and consuming a healthy diet, patients can also boost their healing process and improve the quality of their lives [2].

III. COMPARISON WITH OTHER NON-SURGICAL TREATMENTS:

A. Chiropractic Care

Chiropractic treatment is based on the concept of spinal adjustment of the positioning of the body and its components. Chiropractic employs manipulation of the spine to attempt to decrease irritated nerve function and enhance the body's functionality. Although most patients report positive outcomes of the chiropractic adjustments, the effects can be short-lived, and the method does not address the muscle atrophy caused by prolonged sitting or poor posture . Physical therapy on the other hand focuses on the strengthening and flexibility exercises combined with the manual therapy to achieve better results which are longer lasting [2].

B. Acupuncture

Another modality practiced from early ages is acupuncture, where fine needles are penetrated through the skin at particular points along a channel known as the meridian to balance the energy of the body. Some researches have suggested that acupuncture can lower the intensity of chronic back pain due to release of endorphins and changes in pain response [3]. However, the effects being felt differ from one individual to another and it may take many sittings to note the improvement. While physical therapy involves working on the muscles and teaching the client how to use the muscles properly in order to avoid pain, acupuncture does not stress on strengthening of muscles rather on stimulating of energy points or meridians [2].

C. Pain Medication

Over-the-counter (OTC) pain medications and prescription drugs are commonly used to manage chronic back pain, and the Medications like the NSAIDs (nonsteroidal anti-inflammatory drugs) and muscle relaxants can give the temporary relief by reducing inflammation and relaxing tight muscles, but then, relying on medications alone can lead to side effects such as gastrointestinal problems, dependency, or reduced effectiveness over time. Physical therapy, on the other hand, aims to reduce pain naturally by addressing its root causes through exercises, posture training, and manual techniques, thereby reducing the need for ongoing medication use [1].

D. Massage Therapy

Massage can be effective in reducing the tension in muscles and thus can be recommended for use. It is effective on calming pain for the short-term use as well as enhancing blood flow at the region that has been invaded. Although massages can assist to improve the situation and make patients feel better for some time, they are not able to provide the full range of services necessary for pain management. Physical therapy employs massages into other forms of treatment such as strength training and postural retraining for long-term benefit [2].

E. Yoga and Stretching Programs

Yoga and structured stretching programs promote flexibility, relaxation and centeredness. These practices are useful for back pain because they relieve tension in muscles and improve flexibility that can be useful for stress related pain [3]. Nevertheless, not all the yoga such as postures or stretching exercises is suitable for those who have severe back pain, and the wrong moves may even aggravate the problem. Depending on the injury, PTs may incorporate safely selected stretches and nonsurgical strengthening exercises as an essential component of a formal rehabilitation regimen that helps the patient execute movements properly [4].

IV. BENEFITS OF PHYSICAL THERAPY

Physical therapy is a known approach with many advantages for anyone experiencing long-standing back pain. This non-surgical method is also useful in controlling pain, as well as enhancing the general well-being of a patient. The treatment entails exercise prescription designed to meet the needs of the patient, manual therapy and patient education hence can be regarded as a holistic approach to treatment of pain and other related conditions.

A. Pain Reduction and Management

Amongst other benefits that are from physical therapy, pain alleviation can be said to be one of the major gains. While pain medications manage the pain by suppressing pain receptors, physical therapy addresses the actual cause of the pain [1]. Using stretches and other forms of exercise, physical therapy has the purpose of decreasing inflammation in the affected area, relaxing the muscles, and facilitating blood flow, all of which contribute to the relief of pain. Physical therapy thus enables the body to work in repairing the problem areas hence reducing pains hence no need for long term medication hence no adverse side effects.

B. Improved Mobility and Function

Chronic back pain is characterized with constrains on mobility and significant impairment in activities of daily living.

Physical therapy helps to regain mobility by increasing flexibility and muscle tone of the back muscles as well [3]. A physical therapist helps patients perform certain exercises that mainly focus on the muscles of the stomach, back and legs that play a crucial role in spinal movements. Increased magnitude of mobility enables a person to perform their daily tasks independently, such as walking, bending or other movements. This focus on mobility ensures that the condition does not get worse and the chances of developing further complications are minimized [4].

C. Customization and Personalization

It's also important to note that physical therapy is individual-centered. A physical therapist evaluates each individual's condition, health, and activity level before developing a treatment plan. This customization makes the therapy more effective compared to general treatment or other exercises since it takes into consideration the patient's problem [5]. It consequently offers possibility to monitor and correct the treatment process that results into better outcomes in the long run for the patients. It increases the motivation of the patient and at the same time guarantees that the patient will have the right attitude towards his or her recovery.

D. Reduced Dependence on Medication

One of the major benefits of physical therapy is that it could help reduce or eradicate the need for prescription drugs for pain. However, there are side effects following its use, and it results in dependency when taken for some time [1]. Part of physical therapy involves exercises and manually administered treatments that can help minimize pain and, therefore, the need for medications. The patients can be offered chronic pain relief and without the side effects of the drugs constituting the painkiller category which leads to better health outcomes [5].

V. CHALLENGES AND LIMITATIONS

Physical therapy has been identified as one of the most efficient treatment alternatives for chronic back pain that does not require surgical intervention, yet it also has several drawbacks and can cause certain difficulties like any other therapy. It can also help patients adopt realistic expectations about their illness and consequently manage their treatment regime better. A significant problem encountered in the delivery of physical therapy is patient compliance to the recommended therapies. The key factor is that for the physical therapy to be efficient the patient has to perform the tasks on his own both in and outside clinic [1]. Nevertheless, some people may not be able to stick to this consistency since they are either busy at work, lazy or have a notion that the above exercises do not produce results within a short period. Lack of practice may hinder the impact of physical therapy, and therefore may result to poor progress or less relief from pains [2].

Another limitation is the ability to access well-trained and knowledgeable physical therapists especially in the small towns or remote regions. It has been noted that many urban areas have many physical therapy clinics while rural areas have a small number of clinics and therefore the patients have to struggle to get quality care near them [3]. It can lead to more extended trips to visits, fewer therapy sessions, and, eventually, less efficient treatment. Further, the lack of highly skilled therapists with advanced training in the chronicity of back pains can be a significant challenge for patients seeking to get the best therapy services. The cost of physical therapy may also be prohibitive to many of the patients, especially those who may not be able to access comprehensive health insurance [4]. However, patients may be limited to a certain number of visits depending on the insurance plan, which results in self-financing of the remaining visits. Such issues of cost mean that interrupted treatment can occur, thus compromising the effectiveness of therapy. For patients who do not have insurance providers, the cost may discourage them from seeking physical therapy services even when a doctor has advised them to seek physical therapy services.

VI. CONCLUSION

Physical therapy is a valuable, non-surgical treatment for chronic back pain, as it just helps to reduce the pain, improve movement, and strengthen the muscles that support the spine, but as it gives so many benefits, just like the pain relief and personalized care, but it also do comes with the challenges, just like the need for consistent effort, cost issues, and potential discomfort during treatment. Understanding these challenges can help patients stay motivated and committed to their therapy, and regardless of the these limitations, physical therapy remains one of the most effective ways to manage chronic back pain and improve quality of life. Patients who actively participate and follow their therapist's advice will surely see significant improvements, and so by combining physical therapy with healthy lifestyle changes, individuals can surely achieve the long-term pain management and better overall well-being.

VII. REFERENCES

[1] Shipton, E. A. (2018). Physical therapy approaches in the treatment of low back pain. *Pain and therapy*, *7*(2), 127-137. https://link.springer.com/content/pdf/10.1007/s40122-018-0105-x.pdf

[2] Nees, T. A., Riewe, E., Waschke, D., Schiltenwolf, M., Neubauer, E., & Wang, H. (2020). Multidisciplinary pain management of chronic back pain: helpful treatments from the patients' perspective. *Journal of clinical medicine*, *9*(1), 145.https://www.acpjournals.org/doi/pdf/10.7326/M16-2367?download=true

[3] Ekediegwu, E. C., Chuka, C., Nwosu, I., Uchenwoke, C., Ekechukwu, N., & Odole, A. A. (2019). A Case Series of Non-Surgical Spinal Decompression as an Adjunct to Routine Physiotherapy Management of Patients with Chronic Mechanical Low Back Pain. *J Spine*, *8*(432), 2.https://thespinalscience.com/wp-content/uploads/2022/08/a-case-series-of-nonsurgical-spinal-decompression-as-an-adjunct-to-routine-physiotherapy-management-of-patients-with-chronic-mecha-2165-7939-1000432-1.pdf

[4] Mu, X., Peng, W., Ou, Y., Li, P., Li, Z., & Wei, J. (2022). Non-surgical therapy for the treatment of chronic low back pain in patients with Modic changes: A systematic review of the literature. *Heliyon*, *8*(7). https://www.cell.com/heliyon/pdf/S2405-8440(22)00946-X.pdf

[5] Walton, D. M., & Wideman, T. H. (2022). Physical therapy and rehabilitation. *Clinical Pain Management: A Practical Guide*, 160-169. https://www.researchgate.net/profile/Susumu-Ito/publication/344149766_Statistical_Examination_of_Survey_Data_of_Tama_Frailty_Preventive_Project_Publication_History/links/5f5593d8458515e96d35c5c1/Statistical-Examination-of-Survey-Data-of-Tama-Frailty-Preventive-Project-Publication-History.pdf