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Research Article

A clinical review on effects of dry needling and conventional therapy in condition with non-specific low back pain

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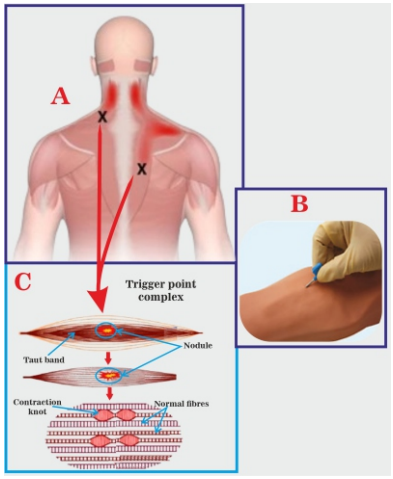
HIGHLIGHTS

1. Dry needling reduces pain in non-specific low back pain.
2. Improves function and mobility of the lower back.
3. May offer faster relief compared to conventional therapy.
4. Complements exercise and manual therapy for holistic treatment.
5. Dry needling is a safe and effective option.

GRAPHICAL ABSTRACT



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ABSTRACT

Background and purpose- Non-specific low back pain (NSLBP) that cannot under the any specified causes and that doesn't linked to any specific diseases. This review is intended to check the efficacy of the dry needling and conventional physiotherapy in the treatment of the NSLBP. Methods and materials-The researches were selected randomly which were related to NSLBP.The researches relevant to the Pubmed (the Lancet), BMC and Google Scholar.

Conclusion-Dry needling and conventional physiotherapy - both are effective but some studies shows dry needling is more effective in non-specific low back pain, myofascial pain and trigger point pain. It is suggested that more randomized trials could be taken to assess the efficiency of dry needling. The therapist could incorporate dry needling in their rehabilitation protocols for the benefit of patients.

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INTRODUCTION

Non-specific low back pain refers to the condition of experiencing low back pain without any specific disease or identifiable cause, such as infection, osteoporosis, radiculopathy, cauda-equine syndrome, lumbar fracture, or structural deformity.[1]This type of pain is typically categorized into three phases. The initial stage of lower back pain (LBP) is called Acute Low Back Pain (ALBP) and it lasts for about a month after the onset of the condition. In the following 2-3 months, it is referred to as sub-acute low back pain, and if the pain persists for more than three months, it is categorized as chronic low back pain.[4] Research shows that although most patients with ALBP find relief from pain and disability within a month, there is a considerable number of patients who transition to chronic pain due to the recurring nature of LBP.[5,6] You will need to endure this symptom for the entirety of your life. In addition, treating low back pain (LBP) has become very costly and is ranked as the 6th highest burden among musculoskeletal diseases.[7] Nonspecific low back pain (NSLBP) refers to pain that is not caused by a specific disease or condition like cancer, virus, bacteria, or bone fracture, but rather has an unknown cause.[3] NSLBP is commonly divided in--to three categories: acute, sub-acute, and chronic low back pain. This categorization is determined by how long the back pain lasts. Acute low back pain refers to a short episode of pain in the lower back that lasts for less than 6 weeks. Sub-acute low back pain lasts between 6 to 12 weeks, while chronic low back pain persists for 12 weeks or longer.[2] On the other hand, dry needling involves the insertion of thin needles, similar to acupuncture, without any injection of substances (Figure-1). Dry needling is commonly used to alleviate various neuro-musculoskeletal pain syndromes.

The process of caring for muscles, ligaments, tendons, subcutaneous fascia, scar tissue, peripheral nerves, and neurovascular bundles.[8,11,12] Many international body have been emphasized upon the dry needling by numerous global organizations, including the prominent US-based organization.[13]

America The Physical Therapy Association, especially, is expressing worry about the use of certain terms like "intramuscular manual therapy" or "trigger point dry needling" to refer to techniques used by different professional organizations.[14-18] The act of inserting a needle into a trigger point in the muscle belly, known as IMT, is a component of dry needling. However, it is important to note that IMT and TDN should not be used synonymously.

Figure.1 Technique of dry needle insertion

Figure.2. Dry needle position over the lower back region

The purpose of this article is

1. To clarify efficacy of the comparison between dry needling and conventional therapy protocol for the NSLBP.
2. To provide the healthcare professional and clinician about accuracy of the dry needling treatment.

Materials and Methodology

The researches were selected randomly which were related to NSLBP. The researches relevant to the Pubmed (the Lancet), B--MC, Nigerian Journal of Clinical Biosciences and Google Scholar were searched with the keywords of non-specific low back pain, dry needling, Electro-dry needling and Low back pain.

Study selection

Studies for this review were taken from the several studies concerned to NSLBP with inclusion and exclusion criteria including age between 20-70 years. The inclusion and exclusion criteria are describes in table 1.

	Inclusion	Exclusion
Study year	From year 2000-2022	Before year of 2000
Study design	RCTs, Systematic reviews,	Retrospective, Cross sectional, study, Surveys
Settings	OPD, and Clinics	IPD
Context	Dry needling, NSLBP	chiropractic, massage, dry cupping
Outcomes measures	VAS,NPRS,	Flacc scale, MMT, FIM

Table-01

Data extraction and analysis

4 reviewers independently completed data extract and review the information extracted were on following study characteristics.

1. Research aim
2. Introduction
3. Material and methods
4. Conclusion

The characteristics mentioned above are summarized in table 2.

S.no.	Characteristics	Author	Year	Country	Research design	Conclusion
1	Efficacy of lumbar bracing strategies and hollowing exercise for lumbar degenerative disease	Kamalakannan M, Praveen Kumar Kandakurti, Jenifer Augustina S., K.Ramana, Kumaresan A.	2021	Turkish	RCT	Concluded that hollowing and bracing exercises with IFT is found to be more effective
2	The efficacy of interferential therapy and exercise therapy in the treatment of low back pain	Olawale, O. A.; Agudzeamegah, C. M.[1]	2014	Nigeria	RCT	The ift is effective with exercise therapy
3	Dry needling versus a non-invasive multicomponent intervention in the treatment of myofascial trigger points in patients with chronic low back pain	Inmaculada Carmen Lara-Palomo, Eduardo Antequera-Soler and Héctor García-López	2023	Spain	RCT	Dry needling has more positive effects on disability, pain intensity, kinesiophobia, and reducing patients' sensitivity to TRPs.

4	The effectiveness of dry needling in patients with chronic low back pain	Joanna Rajfur , Katarzyna Rajfur , Łukasz Kosowski	2022	Poland	RCT	Dry needling is effectively reducing pain and improves functional efficiency in LBP patients.
5	Is dry needling is effective in low back pain?	Han-Tong Hu , Hong Gao, Rui-Jie Ma	2018	China	Systematic review	Dry needling is more effective in alleviating pain and disability.
6	Physiotherapy combined with dry needling among patients with chronic low back pain	Md Shafiullah Prodhania, Gias Uddin Ahsan	2023	Bangladesh	RCT	The physiotherapy combined with dry needling is more effective in patients of low back pain.
7	Comparing non-thrust manipulation with segmental and distal dry Needling on pain, disability, and rate of recovery for patients with non-specific low back pain.	Griswold, a F. Gargano, and K. E. Learman	2019	United States of America	RCT	Results indicate the non-thrust manipulation and dry needling produces meaningful effectiveness in the nonspecific low back pain.
8	Effectiveness of dry needling versus a classical physiotherapy program in patients with chronic low-back pain.	Emİne Handan Tüzün, Sıla Gıldır, Ender Angın	2017	Northern Cyprus	RCT	The Researcher found that Dry needling can be an effective treatment for reducing pain and number of trigger points and kinesiophobia in NSLBP.
9	Effectiveness of Dry Needling and Ischemic Trigger Point Compression in the Gluteus Medius in Patients with Non-Specific Low Back Pain.	Sara Delgado Álvarez, Jorge Velázquez Saornil	2022	Spain	RCT	Dry needling is more effective than ischemic compression in the gluteus medius in the condition with NSLBP.
10	Evidence for Dry Needling in the Management of Myofascial Trigger Points Associated With Low Back Pain.	Lin Liu , Qiang-Min Huang, Qing-Guang Liu	2018	China	Systemic review	The reviewer found that many researcher have got moderate evidenced showed that dry needling could be recommended to relieve the intensity of LBP.

Table-02

Discussion

Several studies have investigated the effects of dry needling and conventional therapy for non-specific low back pain. While both approaches have shown promising results in reducing pain and improving function, the comparative analysis reveals some distinct differences.Conventional therapy often focuses on long-term management and maintenance of back pain, while dry needling may provide more immediate relief by targeting specific trigger points.

Dry Needling as an Alternative Treatment- Dry needle made up of surgical stainless steel which is commonly composed of chromium metal (12-20%) and nickel (8-12%). Dry needling involves the insertion of thin stainless steels needles into trigger points or areas of muscle tightness to alleviate pain and improve muscle function. This technique targets myofascial trigger points, which are often associated with non-specific low back pain. By releasing tension and promoting blood flow to affected muscles, dry needling aims to reduce pain and improve overall musculoskeletal function.(figure-2.)

In conventional therapy, the Short Wave Diathermy's high-frequency electromagnetic energy penetrates patient's body and is absorbed by the tissues. Since ions are present in body tissues, the electromagnetic energy causes the ions to travel in different directions, developing friction between the moving ions and in the tissues around them. This promotes the healing of the soft tissues and lessens the joint pain.

In patients with low back pain, low-frequency currents are used to enhance the physiological effects of the therapies by utilising electrical stimulation to enhance specific physiological reactions and achieve a faster analgesic and anaesthetic effect than those obtained with standard dry needling.19 There is not enough scientific data to support the therapeutic benefits of electrical dry needling for CLBP, despite its widespread use in clinical physiotherapy.

Interferential Therapy (IFT) - Before commencing the treatment, the patient's skin sensation was evaluated.The patient was placed in a prone lying position. Thrice a week, for 20 minutes interferential therapy was applied. The painful region and the spinal nerve root were covered with the 4-pole electrodes in a crossfire method. Applied over the skin of the lower back area to stimulate the underlying nerves and including nerves which is involved in the pain perception.

Olawale, O. A.et.al. (2014), in their research found that the effects of IFT are more effective when combined with some specific exercises in non-specific low back pain. They also found that spinal extension range increased in the subjects who underwent this study.

Kamalakannan M.et.al.(2021), It has been concluded that hollowing and bracing exercises with IFT is found to be more effective than the regular low back strengthening exercise with IFT in reducing pain and improving functions.

Lara-Palomo, Antequera-Soler, ET. Al (2023), 6 week electrical dry needling on low back pain, and a non-invasive intervention (home exercise programmed, stretching and ischemic compression).The result show dry needling is more effective th--an other intervention like HEP and stretching and ischemic compression.

Joanna Rajfur et. Al.(2022) in their research found that the effects of Dry needling is effectively reducing pain and improves functional activity in patients with lower back pain.

Han-Tong Hu .et. al.(2018) found that the results of their research dry needling is more effective in alleviating pain and disability in lower back patients.

Md Shafiullah Prodhania.Et.al. (2023) in their research they found dry needling is more effective in combination with physiotherapy.

Griswold, a F. Gargano et.al (2019) according to results of their research is Non-thrust manipulation (NTM) and Dry needling produces meaningful effectiveness in the nonspecific low back pain.

Emİne Handan Tüzün. Et.al. (2017) in their research they found Dry needling can be an effective treatment for reducing pain and number of trigger points in condition with NSLBP.

Sara Delgado Álvarez. Et. al.(2022) in their article mentioned the results of their research is Dry needling is more effective than ischemic compression in Non-specific low back pain.

Lin Liu , Qiang-Min Huang et. Al. (2022) in their systemic review they have found moderate evidenced showed that dry needling could be recommended to relieve the intensity of LBP.

Conclusion

The effects of dry needling and conventional therapy in the management of non-specific low back pain are multifactorial and needs careful consideration. Dry needling and conventional physiotherapy - both are effective but some studies shows dry needling is more effective in non-specific low back pain, myofascial pain and trigger point pain. By understanding the distinct mechanisms and therapeutic effects of dry needling and conventional physiotherapy, the healthcare providers' needs to emphasize more on the specific needs of individuals with non-specific low back pain. It is suggested that more randomized trials could be taken to assess the efficiency of dry needling. The therapist could incorporate dry needling in their rehabilitation protocols for the benefit of patients.

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