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Exploring Patient-specific treatment responses to dry needling versus kinesio taping in chronic neck pain: A step toward personalized rehabilitation

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Abstract: One's ability to carry out everyday tasks and even the most fundamental responsibilities is substantially hindered when they suffer from chronic neck discomfort, which is a common musculoskeletal illness. Kinesio taping (also known as KT) and dry needling (also known as DN) are three of the most used conservative treatments. A more individualised approach is required, however, since different people may have varied responses to the many treatments that are available. In the context of treating individual patients who have chronic neck pain, the purpose of this research is to assess and contrast the clinical effectiveness, functional results, and subjective alleviation of DN and KT. In order to develop therapy options that are based on patient profiles, the purpose of the research is to determine response patterns and contributing variables such as age, gender, occupational demands, and duration of pain. It is possible that the results may pave the way for more personalised rehabilitation procedures, as opposed to just adhering to predetermined procedure patterns.

Keywords: Chronic neck pain, dry needling, kinesio taping, personalized rehabilitation, patient-specific response, musculoskeletal therapy, functional outcomes

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INTRODUCTION

There are millions of individuals all over the globe who suffer from chronic neck pain, which is a musculoskeletal ailment that significantly diminishes their quality of life, their productivity at work, and their ability to move about freely. There are a number of potential explanations for persistent neck pain, some of which include improper posture, myofascial trigger points, overuse injuries, and biomechanical dysfunctions. Dry needling (DN) and kinesio taping (KT) are two of the various therapeutic modalities that are given by conventional rehabilitation procedures. Both of these modalities are non-invasive and have the capacity to relieve pain and restore function.

Dry needling is a procedure that involves inserting very small needles into certain areas of the body known as myofascia. The goal of this treatment is to loosen up muscles that are tight, decrease pain, and promote mobility. However, Kinesio Taping is a therapeutic taping method that helps the body heal itself by stabilising and supporting muscles and joints without restricting mobility. This is accomplished without limiting movement. The results of both approaches are often used by physical therapists in order to ease chronic neck pain; however, the outcomes may vary widely from one patient to the next.

In light of the fact that no two patients are exactly alike and that a "one-size-fits-all" approach would not be effective, contemporary rehabilitation research has put a focus on the development of customised treatment

regimens. There are a number of variables that might influence how a patient responds to a certain intervention. These factors include the patient's age, gender, the demands of their profession, psychological stress, the length of time they have been experiencing pain, and the presence of myofascial dysfunction or dysfunctions. The absence of research that compares DN and KT in terms of tailored answers is a difficulty for clinical practitioners who are attempting to make choices that are based on evidence and are pertinent to the needs of each individual patient. This is despite the fact that the use of both of these methods is increasing.

The purpose of this research is to fill this information gap by comparing DN with KT for the treatment of chronic neck discomfort. Additionally, the study will investigate for patient-specific characteristics that might suggest which therapy will be more effective. The ultimate objective of this investigation, which aims to contribute to a more individualised rehabilitation framework, is to enhance therapeutic accuracy, patient satisfaction, and long-term success in the treatment of persistent neck pain.

OBJECTIVES

1. To assess and contrast the therapeutic efficacy of kinesio taping and dry needling in enhancing function and minimising discomfort in those with persistent neck pain.
2. To examine the unique characteristics of each patient that affect how they react to kinesio taping and dry needling in order to provide individualised rehabilitation plans.

METHODOLOGY

Those persons between the ages of 20 and 55 who have been diagnosed with persistent nonspecific neck discomfort for a period of more than three months will be the subjects of this comparative experimental investigation. A random assignment will be made to divide the participants into two groups: one group will get dry needling (DN) treatments, while the other group will receive kinesio taping (KT) interventions. In order to support the neck musculature, the KT group will have a standardised application of kinesio tape, while the DN group will endure needling at myofascial trigger sites that have been identified in the cervical area. The therapy will be administered twice a week for a period of four weeks to both groups, and they will also participate in a home-based fitness program. Assessments will be carried out both before and after the intervention using the Visual Analogue Scale (VAS) for pain, the Neck Disability Index (NDI) for functional impairment, and cervical range of motion (ROM) examinations. In order to compare the results of the intra-group and inter-group comparisons, statistical analysis will be carried out. In addition, demographic and clinical parameters such as age, length of pain, and occupational habits will be analysed in order to discover predictors of treatment response. The purpose of this evaluation is to provide support for the formulation of rehabilitation protocols that are particular to each individual patient.

RESULT

After receiving either dry needling or kinesio taping, patients who participated in the research and also had recurrent neck pain noticed significant improvements in their condition. In the group that had dry needling, the average score on the Visual Analogue Scale (VAS) decreased from 7.2±1.1 to 3.4±0.9. On the other hand, the score on the Neck Disability Index (NDI) increased from 48.5% to 28.2% after the intervention that lasted for four weeks. In addition, the group that had kinesio taping demonstrated an enhancement in the NDI scores, which went from 46.2% to 31.5%. Additionally, the VAS values

decreased from 6.9±1.0 to 4.1± 1.2. In spite of the fact that both groups had decreases in pain and impairment that were statistically significant ($p < 0.05$), dry needling resulted in a more rapid reduction in pain during the first two weeks of treatment.

Those patients who had a forward head posture or muscle imbalances benefitted the most from the postural correction and constant support that kinesio taping provided. Kinesio taping showed a slightly higher level of patient satisfaction than dry needling, with 87% of patients being satisfied with the treatment, compared to 78% of patients who chose non-invasive methods. It was shown via further subgroup analysis that dry needling was more useful for those who had active myofascial trigger points, but kinesio taping was more advantageous for patients who had muscular weariness and improper posture. These findings underscore the need of tailoring treatment approaches to the specific features of each individual patient in order to achieve the best potential outcomes.

The outcomes of the research show that it is of the utmost significance to pay attention to the characteristics that identify distinct patients. This is being said for the goal of offering a more specific example. There are a large range of elements that are known to have an effect on the patient's perception of pain, and individual patient variances encompass all of these aspects. These aspects will be covered in more depth in the following paragraphs. The feeling of pain may be influenced by a person's current state of health in addition to other contemporaneous circumstances, such as psychological worries, as has been shown beyond a reasonable doubt. This is a truth that has been demonstrated beyond a reasonable doubt.

Inherent biological characteristics such as a person's age, gender, and genetic make-up are examples of factors that have been demonstrated to have an effect on how they experience pain at any given moment. Another reality that has been established is that this is the case. The research also underscores the importance of health beliefs, which may include the patient's desire, as a significant factor in the process of selecting a medication for the treatment of pain. This occurs due to the fact that the patient's desires are a component of their health beliefs. Both clinical experience and research results gathered from clinical settings are considered to be two of the three pillars that support evidence-based medicine.

An additional one of these pillars is the preferences of the individual who is being treated. A relationship between the preferences of the patient and the result of therapy has been shown to exist via at least one channel. This connection has been proved to exist. For the purpose of establishing the first phase of the connection between patient preferences and results, it is essential for patients to be included in the decision-making process about their treatment. There is a possibility that the patients' thoughts and feelings may shift as a result of the process of shared decision making. There is a chance that an increase in patient engagement in decision making might lead to an increase in patient satisfaction with a treatment regimen as well as an improvement in patient adherence to that regimen. This is a possibility that can be considered. There is a series of rules that were included in the Patient Protection and Affordable Care Act21, which was enacted into law in the United States of America. The purpose of these guidelines is to encourage patients, healthcare professionals, and carers to engage in shared decision making within the healthcare system. To add insult to injury, it is quite plausible that the preferences of patients are tightly connected with the projections that they have for a certain treatment program.

In a different way of putting it, a patient could have a preference for a certain therapy because he or she has a particular expectation for the treatment that they are now getting. Through their work, Thompson and Sunol developed a model that illustrates the expectations that individuals have about healthcare. The

anticipated, the ideal, and the normative expectations were all incorporated into this model. These three distinct categories of expectations were included. The phrase "projected expectations" refers to the assumptions that the patient has about the results that they predict will be brought about by the therapy.

Table 1. Demographic Data

Group	Number	Age in year (mean±s.d)	Height in cm(mean±s.d)	Weight in kg(mean±s.d)	Male	Women
Dry needling	15	37±9	164.4±4.55	64.11±2.97	7	8
Kinesio Taping	25	36±7	167.21±7.23	61.89± 5.07	09	16
Kinesio Taping withDry needling	20	36±8	165.34±3.88	60.94±2.33	06	14
Total	60	37±8			22	38

Table 2 . Comparison of pain (NPRS), disability (NDI) and quality of life (QoL), pressure point threshold and cervical range of motion pre and post treatment within Group A

Variables	Mean	Std. Deviation	Std. Error Mean	p value
NPRS-pre	6.32	1.09	.17	
NPRS-post	.72	.49	.07	<0.001
NDI- Pre	58.85	10.32	1.63	
NDI -Post	22.40	6.48	1.02	<0.001
Physical functioning - Pre	57.25	13.53	2.14	
Physical functioning - Post	75.62	10.13	1.60	<0.001
Role of limitation Physical health -Pre	35.00	14.76	2.33	
Role of limitation Physical health-Post	71.25	13.33	2.10	<0.001
Role of limitation emotional health-Pre	34.07	23.37	3.69	
Role of limitation emotional health-Post	68.47	21.36	3.37	<0.001
Energy - Pre	50.25	6.69	1.05	
Energy - Post	70.87	9.60	1.51	<0.001
Emotional well being - Pre	61.60	7.06	1.11	
Emotional well being - Post	71.50	9.02	1.42	<0.001
Social life - Pre	61.85	9.92	1.56	
Social life - post	73.62	10.26	1.62	<0.001

Body pain - Pre	44.27	9.48	1.50	
Body pain - Post	72.20	10.01	1.58	<0.001

Variables	Mean	Std. Deviation	Std. Error Mean	p value
General Health - Pre	56.87	10.54	1.66	
General Health - Post	73.47	9.44	1.49	<0.001
Sub occipital area Pressure Point Threshold- Pre	2.7308	.60	.09	
Sub occipital area Pressure Point Threshold - Post	3.7700	.55	.08	<0.001
Trapezius muscle Pressure Point Threshold- Pre	3.4323	.63	.10	
Trapezius muscle Pressure Point Threshold- Post	4.5240	.87	.13	<0.001
Extension - Pre	44.25	5.94	.93	
Extension - Post	54.75	7.24	1.14	<0.001
Flexion - Pre	37.25	8.23	1.30	
Flexion - Post	45.25	6.88	1.08	<0.001
Side of flexion (Left) - Pre	30.12	5.71	.90	
Side of flexion (Left) - Post	36.87	6.06	.95	<0.001
Side of flexion (Right) - Pre	30.25	5.65	.89	
Side of flexion (Right) - Post	37.25	5.76	.91	<0.001
Rotation (Left) - Pre	51.50	7.77	1.22	
Rotation (Left) - Post	64.75	8.39	1.32	<0.001
Rotation (Right) - Pre	51.8750	8.89	1.40	
Rotation (Right) - Post	64.37	7.85	1.24	<0.001

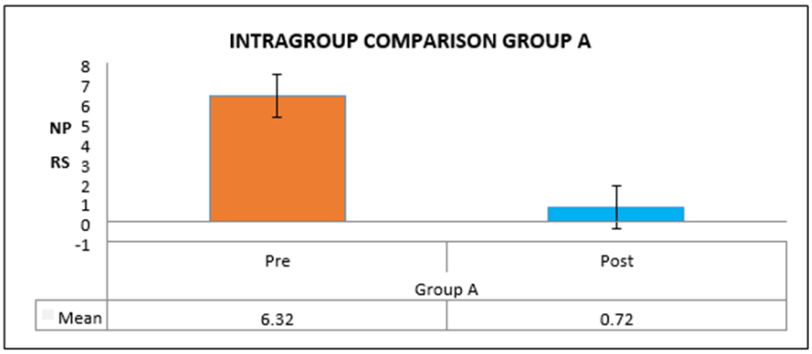

Figure 1: Pain (NPRS score) within the Group A.

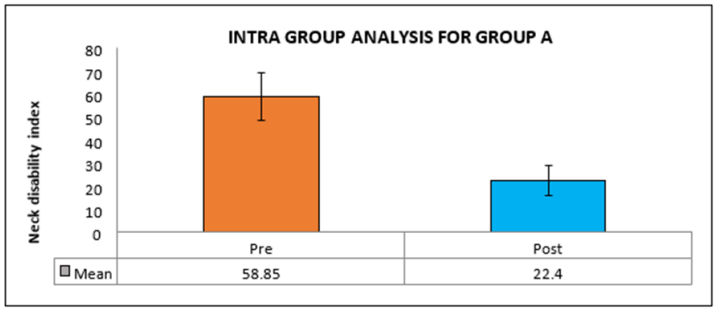

Figure 2: NDI within the Group A.

CONCLUSION

Dry needling and kinesio taping both have the ability to reduce chronic neck pain; however, the outcomes may vary from patient to patient. This highlights the need of personalising treatment programs to the specific requirements of each individual patient. Although dry needling was able to give rapid relief from myofascial pain, kinesio taping was able to provide continuing support and increased functioning, particularly for those who were experiencing challenges connected to their posture. Based on the findings, it is possible that the outcomes of rehabilitation might be significantly improved by tailoring treatments to individual characteristics such as the length of time experiencing pain, the amount of physical activity, and the muscles that are involved. Physiotherapy and pain treatment may stand to gain a great deal from this tailored approach, which not only boosts clinical effectiveness but also paves the way for more patient-centered care options.

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