



Comparative Clinical Efficacy of Dry Needling and Kinesio Taping in the Management of Chronic Neck Pain: A Randomized Controlled Trial

Ipshita Mou^{1*}, Dr. Ravishankar Ravi²

1. PhD Scholar, CMJ University, Jorabat, Meghalaya, India
ipshitamou@gmail.com ,

2. Professor, Department of Physiotherapy, Capital University, Koderma, Jharkhand, India

Abstract: The persistent pain that individuals experience in their necks is a common musculoskeletal illness that has a significant impact on their ability to go about their daily lives and their overall quality of life. In this randomised controlled trial, kinesio taping and dry needling were compared with the purpose of determining whether approach is more helpful in the treatment of chronic neck discomfort. Sixty individuals who were experiencing recurrent neck stiffness were split into two groups: one group would undergo kinesio taping, while the other group would receive dry needling. Over the course of a period of four weeks, the interventions were carried out on each of the groups on a biweekly basis. Among the outcome measures that were examined at the beginning of the intervention, two weeks into the intervention, and three weeks after the intervention was completed, the Visual Analogue Scale (VAS) for pain and the Neck Disability Index (NDI) were among them. It was shown that both therapy resulted in a significant reduction in both disability and pain ($p < 0.05$). On the other hand, the group who had dry needling saw a more rapid decrease in the severity of their pain, but the group that received kinesio taping shown a greater increase in functional support and postural correction. Despite the fact that the findings suggest that both approaches are useful in clinical settings, the selection of one over the other may differ from patient to patient depending on the specific features of the individual and the therapeutic goals that they want to achieve.

Keywords: Dry Needling, Kinesio Taping, Chronic Neck Pain, Randomized Controlled Trial, Visual Analog Scale, Neck Disability Index, Musculoskeletal Rehabilitation

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INTRODUCTION

Patients who suffer from chronic neck discomfort have been demonstrated to benefit from both DN and KT in terms of their ability to significantly lessen the amount of pain they are experiencing. DN, on the other hand, offers immediate relief by deactivating trigger points and decreasing muscular stiffness. This is in contrast to KT, which provides chronic pain modulation via the use of sensory stimulation and support. The results of a number of research have led to the conclusion that DN may have a more substantial impact on the alleviation of acute pain, while KT gives pain relief that is more gradual but continues to be effective for a longer length of time. This conclusion was reached as a consequence of the findings of the investigations.

People who have continuous discomfort in their neck often experience a reduction in the mobility of the cervical area of their body. The range of motion that can be increased by DN may be increased in a number different ways. The reduction of muscle stiffness and the promotion of relaxation are two of the ways that

might be included in this category. By giving constant muscular support and proprioceptive input to the muscles, KT, on the other hand, is able to increase functional mobility. Functional tasks are able to accommodate more movement as a result of this. Research has shown that both of these approaches have the potential to result in increases in cervical mobility as well as improvements in postural alignment. This is the case for both of these possible outcomes.

When it comes to selecting a therapy, the preferences of the patient are an important factor that should be taken into account that should not be overlooked. Despite the fact that it causes some slight pain during the treatment, there are some people who select DN because it provides results in a short length of time. This is the reason why they choose it. On the other hand, there are some people that like KT since it is not intrusive. This is the reason why they favour it. Patients who get both therapies together report better outcomes, including a reduction in pain, an increase in mobility, and a greater level of participation in activities that are part of their daily routine. Therefore, this is due to the fact that the combination of the two treatments results in improved outcomes.

The ability to pick which intervention is the most suitable for patients who are feeling chronic tiredness in their necks requires medical practitioners to have a full understanding of the benefits and drawbacks of both DN and KT. This is required for them to be able to make an informed decision. Individuals who suffer from myofascial pain syndrome and active trigger points are the ones who stand to benefit the most from the use of DN. It is possible, on the other hand, that the use of KT is more appropriate for persons who are looking for long-term support and pain modulation. Following are some topics that should be the primary focus of further research: Research is now being carried out on the subject in order to ascertain whether or not a multimodal approach improves the results of therapy. The influence that DN and KT have when combined is the subject of study that is currently being conducted.

The purpose of the randomised controlled trials that are now being carried out on a large scale is to ascertain whether or not the two therapies are effective throughout the course of a more extended length of time. Investigate the relationship between the patient's response to treatment and patient-specific factors such as the patient's age, profession, and the amount of time the patient has been suffering pain. Kinesio taping and dry needling are both excellent therapies that may be utilised for the management of neck discomfort problems that are persistent. Dry needling is a better option than kinesio taping. By providing non-invasive, continual aid for the reduction of pain and the development of mobility, DN is especially effective in the treatment of myofascial trigger points and in the promotion of deep muscle function. On the other hand, KT is very helpful in the development of mobility. One further advantage of using DN is that it might help you avoid trigger points, which is another advantage. It is essential to take into consideration the preferences of the patient, the clinical indications, and the particular nature of the musculoskeletal disease in order to make an educated decision among the many treatment methods that are available. If you are experiencing prolonged neck discomfort, it is possible that a combination of DN and KT might give a more thorough approach to the process of pain management. This is something that is worth considering. The fact is that this is the case, despite the fact that the benefits that each treatment provides are quite different from one another. It would be beneficial to do further study in this field in order to improve the results for patients and, as a consequence, bring about improvements in treatment regimens

OBJECTIVES

1. To assess and contrast how well kinesio taping and dry needling work to lessen the severity of pain in individuals with persistent neck discomfort.
2. To use the Neck impairment Index (NDI) to evaluate how kinesio taping and dry needling affect neck mobility and functional impairment.

METHODOLOGY

The framework of the research is described in this part, which includes the sampling strategy, the technique of data collection, the statistical software that was used for analysis, and other factors. For the purpose of making a contribution to the improvement of quantitative research, the current study makes use of the positivist paradigm. Following the stage in which information and observations are gathered, quantitative methods such as quantifiable assessments, exams, and evaluations are used in order to quantify everything. This stage is the stage in which the information and observations are gained. The relevance of positivism lies in the fact that it makes use of the identification of interconnected characteristics in order to expand one's understanding of reality, which in turn helps to preserve the reality of the world. The relevance of positivism may be attributed to this, however. Positivism is a well-known quantitative approach, which makes it an enticing choice for the research that has been proposed. To add insult to injury, positivism is a method that has been used for long.

RESULT

Dry Needling Technique

During the course of the treatment, the competent manual therapist used an acupuncture needle that measured 15 millimetres in length for the suboccipital muscle and 40 millimetres in length for the trapezius muscle. During the whole process, the therapist donned hand gloves and used antibacterial solutions to sterilise the area where the therapy was being administered. Identification of the trigger point was accomplished by the use of the palpatory method. The individuals who are a part of the dry needling group will be given a series of treatments that include dry needling. Myofascial trigger points around the neck and upper back will be the focus of these treatments, which will be administered at varying intervals. The individual who will carry out the operation is going to be someone who is qualified to perform physiotherapy and has previous experience working with dry needling. The length of time that each session will run will range anywhere from twenty to thirty minutes. Each week, there will be a total of five sessions that will take place throughout the duration of the five-week term. During each of these sessions, participants will get treatments. The use of sterile needles with a diameter of 0.25 millimetres and lengths ranging from 30 to 40 millimetres will be required in order to perform dry needling. A local twitch response may be induced by the therapist by first locating myofascial trigger points in the cervical and upper trapezius muscles, and then injecting needles into those trigger points until they are triggered. This process is repeated until the trigger points are active. Depending on the circumstances, the time it takes to remove the needle from its holding position might range anywhere from thirty seconds to one minute.

Kinesio Taping

The standard dimensions for rolls of kinesiology tape are five cm in width and five meters in length generally. On the other hand, kinesiology tape may be purchased in a number of different widths, such as 2.5 centimetres, 3.75 centimetres, 7.5 centimetres, and 10 centimetres. When it comes to joints and muscles that are smaller, it is advisable to use tapes with narrower widths, while tapes with wider widths are utilised for larger areas.

Kinesio tape will be applied to the muscles in the upper back and neck of those who are a member of the group that will be receiving kinesio taping. Kinesio tape is a kind of therapeutic tape that is composed of elastic and is intended to be worn for a period of time ranging from five to seven days once it has been effectively placed. At the beginning of each session, which will last between fifteen and twenty minutes, kinesio tape will be applied to the areas that are affected by the condition. Treatments will be administered once per week during the duration of the five-week term, and the total number of sessions will likewise be equivalent to five.

The application of Kinesio tape will be carried out in accordance with the recommendations that are advised for the treatment of chronic neck pain by a physiotherapist who has received this training. The tape will be applied in a way that makes use of varying degrees of stretch, with the specific muscle groups that are involved being taken into mind. This will be done with the intention of giving support and aiding lymphatic drainage. During the application, the patient will be positioned in a neutral and comfortable posture, and the tape will be left in place for the duration of the week. The application will be carried out.

Prior to the commencement of the therapy, both the subjective and objective measurements were collected. The post-treatment reading was carried out five weeks later, that is, immediately after the intervention period had concluded.

A) Subjective Measures

1. Numerical Pain Rating Scale

The National Pain Rating Scale (NPRS) is a scale that spans from 0 to 10, with 0 signifying no pain and 10 reflecting the maximum amount of agony. It is a reliable and accurate tool for evaluating the intensity of pain that patients feel.

2. Neck Disability Index

It is a rigorous and reliable disability inventory that consists of twenty-five questions that is used to assess the functional as well as emotional repercussions of day-to-day life. The NeckDisability Index is a disability inventory. With its support, it is possible to get a more precise conclusion about the effectiveness of the management method. Each of the questions that were included in the inventory required a response of "yes" (four points), "sometimes" (two points), and "no" (zero points). The replies that were required were also required. As far as the person was concerned, a considerable neck impairment was indicated by a score of one hundred points, which indicates the greatest attainable score.

3. Quality of Life

For the purpose of determining an overall quality of life, the SF-36 form, which is also referred to as the

MOS 36-item short form health survey, is taken into serious account. While Ware and his colleagues were responsible for the conception and development of the form in question, Kocyigit and his colleagues were the ones who were responsible for adapting it to the validity and reliability requirements that are applicable in Turkey. A total of thirty-six distinct components make up the form, and the concerned person is the one who is responsible for filling out each and every option. There are eight different components of health that are taken into account by these items. There are ten items that are associated with physical function, two items are associated with social function, three things are associated with role restrictions that are associated with physical difficulties, three things are associated with emotional problems, five items are associated with mental health, four items are associated with liveliness, and two items are associated with pain. Both changes in health (one item) and general health (five items total) are covered in this category. Additionally, this category includes general health. A scale ranging from 0 (the poorest health condition) to 100 (the best health state) is used to grade the things, and each item is evaluated on its own without any other considerations. It gives an assessment of the health on a scale that ranges from 0 to 100, where 0 indicates a poor health status and 100 represents a good health condition. This evaluation is provided via the use of subscales.

B) Objective Measures

1. Cervical Range of Motion

A universal goniometer was used in order to carry out the range of motion assessment of the cervical region. All of the movements that are included in the cervical range of motion were done, including flexion, extension, side flexion to the right, side flexion to the left, rotation to the right, and rotation to the left.

Flexion and Extension: It was decided to arrange the patient in a seated posture. The fixed arm of the goniometer was parallel to the ground, and the distal arm was parallel to the longitudinal axis of the tongue depressor. The fulcrum was positioned on the external auditory meatus, and the goniometer was positioned such that it was parallel to the ground. The next step was to demonstrate flexion and extension to the patient.

Side Flexion to Right and Left: In order to ensure the patient's comfort, it was determined that they should be seated. Both the static arm and the distal arm were orientated along the dorsal midline of the neck. The static arm was connected with the thoracic vertebrae while it was in this position. After the spinous process of the seventh cervical vertebra, the fulcrum was positioned above the spinous process. The next thing that needed to be done was to give the patient instructions to do a side flexion to the right and left.

Rotation to Right and Left: The patient was seated in the posture of a patient. The static arm was positioned together with the ear level, and the distal arm was positioned along with the tip of the nose. The fulcrum was positioned over the centre of the cranial side of the neck. In the next step, the patient was instructed to rotate to the right and left.

2. Pressure Point Threshold

Algometer Method: We were able to determine the least amount of pressure that produced pain by using the Wagner FDX-25 Algometer to measure the pressure pain threshold. This implies that we were able to

determine the threshold in terms of pressure. Taking a sitting position, the patient assumed the posture of a patient. The first area where trigger sites were discovered was in the vicinity of the occipital region. When the minimum of three trigger points had been taken into account, an algometer was positioned at a 90-degree angle on the trigger point that had been discovered. A determination was made on the participant's level of pain tolerance, and the pressure was applied in kilogrammes per square foot. Following the completion of the treatment program for a period of four weeks, the pressure readings obtained from the algometer were recorded on the same trigger locations, and any differences that were seen were evaluated.

Table 1. 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 B

Variables	Mean	Std. Deviation	Std. Error Mean	p values
NPRS (Numerical Rating Scale - Pre)	6.65	0.96	0.15	
NPRS (Numerical Rating Scale - Post)	2.86	1.18	0.19	<0.001
NDI -Neck Disability index- Pre	58.68	9.12	1.48	
NDI -NeckDisability index - Post	22.63	6.11	0.99	<0.001
Physical functioning - Pre	59.86	12.32	2.00	
Physical functioning - Post	74.73	8.45	1.37	<0.001
Role of limitation Physical health - Pre	36.84	19.04	3.08	
Role of limitation Physical health- Post	72.36	17.23	2.79	<0.001
Role of limitation emotional health-Pre	33.26	24.63	3.99	
Role of limitation emotional health- Post	70.28	23.05	3.73	<0.001
Energy - Pre	51.71	8.24	1.33	

Energy - Post	70.39	7.65	1.24	<0.001
Emotional well being - Pre	63.05	6.47	1.04	
Emotional well being - Post	71.78	8.90	1.44	<0.001
Social life - Pre	61.50	9.89	1.60	
Social life - post	73.76	11.64	1.88	<0.001

Variables	Mean	Std. Deviation	Std. Error Mean	p values
Body pain - Pre	44.31	8.89	1.44	
Body pain - Post	73.02	9.58	1.55	<0.001
General Health - Pre	54.86	7.75	1.25	
General Health - Post	74.47	9.35	1.51	<0.001
Sub occipital area Pressure Point Threshold- Pre	2.57	.603	0.09	
Sub occipital area Pressure Point Threshold - Post	3.00	0.75	0.12	<0.001
Trapezius muscle Pressure Point Threshold- Pre	3.40	0.69	0.11	
Trapezius muscle Pressure Point Threshold- Post	3.52	0.74	0.12	<0.001
Extension - Pre	44.73	6.96	1.13	
Extension - Post	53.94	5.08	0.82	<0.001

Flexion - Pre	35.52	7.51	1.21	
Flexion - Post	43.55	6.76	1.09	<0.001
Side of flexion (Left) - Pre	30.39	5.85	0.95	
Side of flexion (Left) - Post	37.36	5.29	0.85	<0.001
Side of flexion (Right) - Pre	29.07	6.24	1.01	
Side of flexion (Right) - Post	36.44	6.03	0.97	<0.001
Rotation (Left) - Pre	53.55	10.06	1.63	
Rotation (Left) - Post	66.18	9.89	1.60	<0.001
Rotation (Right) - Pre	52.10	9.90	1.60	
Rotation (Right) - Post	65.39	9.18	1.48	<0.001

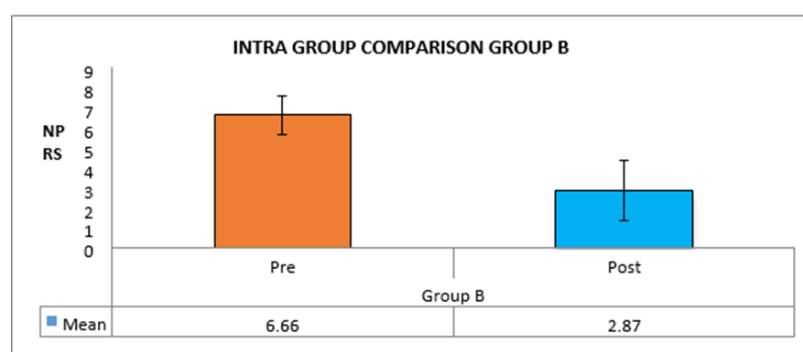


Figure 1.: Pain (NPRS score) within the Group B

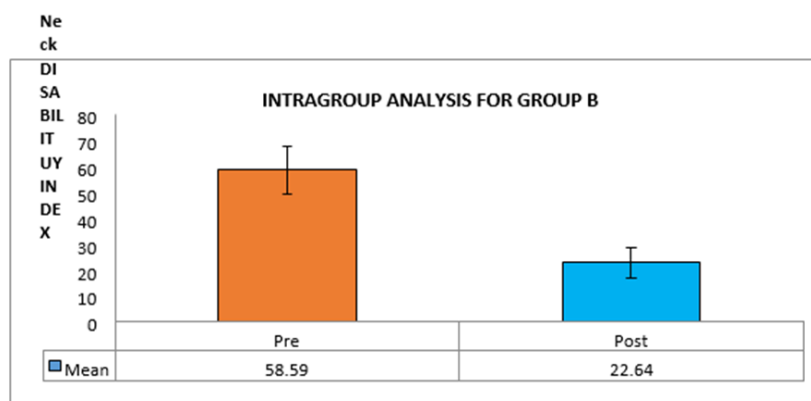


Figure 2. : NeckDisability Index (NDI) within the Group B

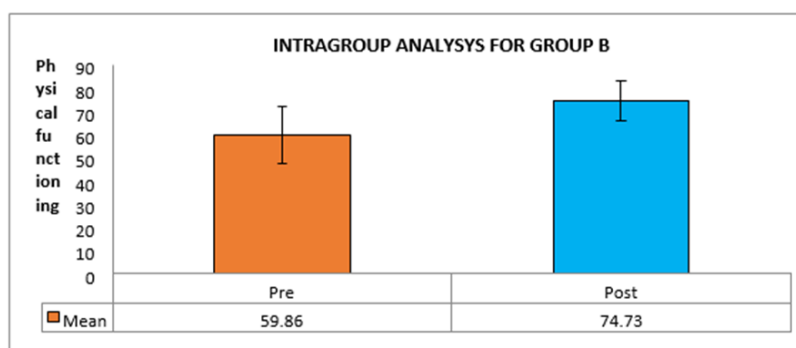


Figure 3 : Quality of Life (Physical Functioning) within the Group B.

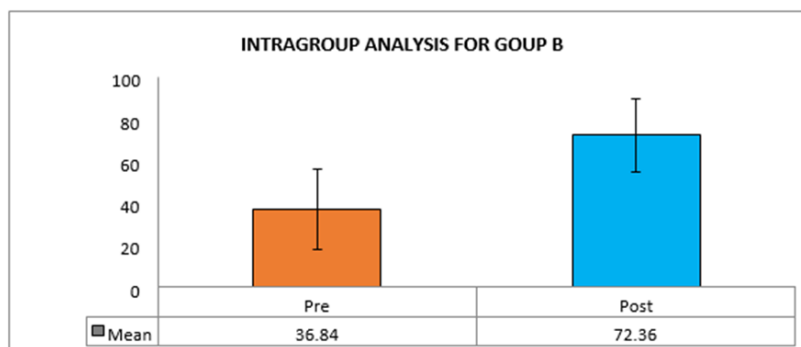


Figure 4 : Quality of Life (Role of limitation physical health) within the Group B.

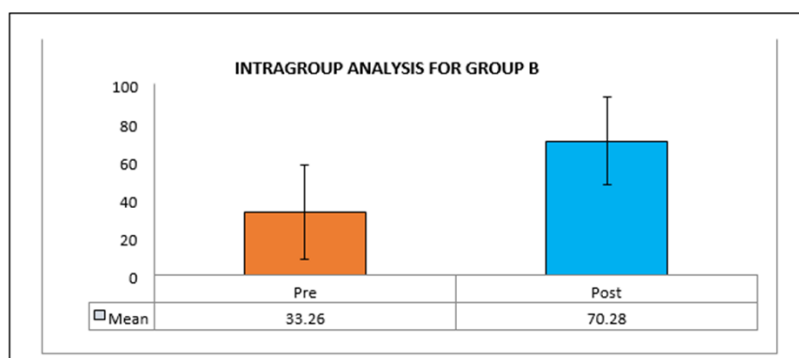


Figure 5 : Quality of Life (Role of limitation emotional health) within the Group B

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 C

Variables	Mean	Std. Deviation	Std. Error Mean	p values
NPRS (Numerical Rating Scale) - Pre	6.59	1.23	0.20	
NPRS (Numerical Rating Scale) - Post	0.16	0.37	0.06	<0.001
NDI -NeckDisability index– Pre	57.35	10.18	2.05	
NDI -NeckDisability index – Post	9.18	6.88	1.13	<0.001
Physical functioning – Pre	58.91	9.86	1.62	
Physical functioning - Post	87.83	6.82	1.12	<0.001
Role of limitation Physical health– Pre	35.81	16.18	2.66	
Role of limitation Physical health– Post	86.48	13.93	2.29	<0.001
Role of limitation emotional health – Pre	32.37	25.56	4.20	
Role of limitation emotional health–Post	83.94	16.72	2.74	<0.001

Energy – Pre	50.27	8.97	1.47	
Energy – Post	84.45	8.56	1.40	<0.001
Emotional well being – Pre	60.97	7.95	1.30	
Emotional well being - Post	83.62	5.88	0.96	<0.001
Social life – Pre	60.89	8.23	1.35	
Social life – post	83.94	10.56	1.73	<0.001

CONCLUSION

Dry needling and Kinesio Taping were both demonstrated to be useful in decreasing pain, improving quality of life, lowering pain pressure thresholds, and increasing cervical range of motion in patients who suffered from chronic neck pain, according to the findings of the study. Dry needling was also proven to be beneficial in reducing pain. It is possible, on the other hand, that the improvement may be maximised by doing a combined treatment that comprised both dry needling and Kinesio Taping. Given the information that has been presented, it is feasible to draw the conclusion that the null hypothesis is not accurate. Additionally, it is conceivable to suggest that dry needling and Kinesio Taping might be used as a helpful treatment approach for persistent neck pain within the framework of normal therapeutic practice. This is something that could be considered. It is the first research of its kind to establish the effects on persistent neck pain, and the findings of this study are absolutely ground-breaking and should be considered revolutionary.

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