ISSN: 2230-9926

Available online at http://www.journalijdr.com

IJDR

International Journal of Development Research
Vol. 13, Issue, 10, pp. 63957-63962, October, 2023
https://doi.org/10.37118/ijdr.27304.10.2023

RESEARCH ARTICLE OPEN ACCESS

EFFECT OF COGNITIVE FUNCTIONAL THERAPY VERSUS NECK STABILIZATION EXERCISE TO IMPROVE FUNCTION AND REDUCE PAIN IN SUBJECT WITH NON SPECIFIC NECK PAIN AMONG MIDDLE AGED POPULATION

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ARTICLE INFO

Article History:
Received 17th July, 2023
Received in revised form
26th August, 2023
Accepted 11th September, 2023
Published online 28th October, 2023

KeyWords:

Non specific neck pain,
Cognitive functional therapy,
Neck stabilization exercises.

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ABSTRACT

Introduction: Neck pain causes considerable personal suffering due to pain, disability, and impaired quality of work and life in general, which can be a huge socio-economic burden for both patients and society. Much attention has been paid to evaluating the efficacy of various treatments aimed at preventing or alleviating non specific neck pain. ***Objective:*** To compare between cognitive functional therapy with neck stabilization exercise to reduce pain and improve function in subject with non specific neck pain among middle aged population. ***Method:*** 40 participants with non specific neck pain were assigned into two groups (20 participants in each group). Group A was given cognitive functional therapy and Group B was given neck stabilization exercise. The outcome measures used were NDI and VAS. The treatment was given for 12 days. ***Result:*** comparing between group the mean NDI post score in Group A was 9.70 with a standard deviation 4.60 and the mean NDI post score in Group B was 14.00 with a standard deviation 3.76 which was statistically significant (p value <0.005) . The mean NPRS post score in Group A was 3.15 with a standard deviation 0.93 and the mean NPRS post score in Group B was 4.05 with a standard deviation 1.05 which was statistically significant (p value <0.021) (t - value is 2.29925). In summary Group A is better than group B for NDI and NPRS. **Conclusion:** Cognitive functional therapy is a preferable treatment option in patients with non specific neck pain in terms of pain relief and function improvement.

Citation*: *Shanith K.A., Dr. Vikranth Rao, Dr. Sajeevan Tharayil and Jimshad T U, 2023. "Effect of cognitive functional therapy versus neck stabilization exercise to improve function and reduce pain in subject with non specific neck pain among middle aged population". *International Journal of Development Research*, 13, (10), 63957-63962.

INTRODUCTION

Neck pain is a wide concept and there are multiple meanings of it. The pain can stem from any of the neck structures. Structural or functional abnormalities of the spine, muscles, ligaments, joints or poor posture may be the root causes of neck pain (Ehsani, 2012). These include the intervertebral discs, ligaments, muscles, facet joints, dura and nerve roots. There are a large number of potential causes of neck pain. These vary from tumors, trauma (e.g. fractures, whiplash), infection, inflammatory disorders (e.g. Rheumatoid arthritis) and congenital disorders (Borghouts, 1998). However in most cases, the underlying pathophysiology of neck pain is unknown and as a result it is referred to "non-specific neck pain." (Ehsani, 2012). This group involves patients with primarily mechanical conditions involving degenerative changes, which may be classified as non-specific neck pain (Borghouts, 1998) Non-specific neck pain may therefore be characterized as simple (non-specific) neck pain without a particular underlying condition causing pain where there is no distinct underlying disorder or irregular anatomic structure (Hides, 1996; Tsakitzidis, 2013). Any type of acute, sub acute or chronic neck pain where there is no irregular anatomic structure; as a cause of pain, non-specific neck pain is recognizable (Tsakitzidis, 2013). Neck pain is a significant public health concern, and its prevalence is increasingly growing (Côté, 2001) In all studies the prevalence of idiopathic neck pain ranges from 67% to 71%; it has been shown that most people experience some neck pain during their lifetime (Fernández-de-las-Pe-as, 2007). The annual incidence in developed countries of non-specific neck pain varies from 27% to 48% (Carragee, 2008). Studies have shown that this disease is more prevalent in women than in men (Hoftun, 2011) and more prevalent in middle-aged women (Hogg-Johnson, 2008). Risk factors are variables associated with a greater likelihood that particular pathology can develop. As with other musculoskeletal conditions, it is believed that the occurrence of non specific neck symptoms is linked to several factors (Ariens, 2002 and Barton, 1996). Recognizing factors

predisposing individuals to neck pain can lead to the identification of at-risk groups and primary prevention measures. Primary prevention is directed toward reducing the risk of initial onset of a problem (Cassou, 2002 and Lahad, 1994). Overuse of our body's muscles can cause some injuries. Typically our body responds to those injuries by creating scar tissue and adhesions. In addition, soft tissue disorders can restrict the range of motion of the neck around the head and neck region and cause neck pain and muscle weakness (Jull, 2009). Also, some muscles in the cervical spine have been shown to appear to weaken in neck pain; deep and anterior cervical flexors are the most prominent of these (Chiu, 2002). During mentally stressful activities performed in the absence of physical demands, stimulation of trapezius muscle motor units has been observed and the combination of mental and physical stress has been shown to increase trapezius muscle activity more than just the combined effect of increasing stressor alone (Celenay, 2016).

In patients with neck pain, chronic over activity of the superficial cervical muscles has been reported to result in increased muscle fatigue and decreased muscle strength and endurance capability, sense of joint position, and range of motion. Moreover, impairment of the neighboring area, thoracic spine and shoulder girdle, was observed in patients with neck pain. Especially, the impairment of scapular dysfunction was remarkable. In patients with neck disorders, increased activity of the axioscapular muscles and decreased activity of the lower trapezius and the anterior serratus were emphasized (Celenay, 2016). Psychosocial stress can contribute to neck pain, in addition to biomechanical factors (Bongers, 2006). Constant exposure to biomechanical and psychosocial stressors will potentially lead to muscle and pain spasms. Over time, functional conditions, levels of activity, and job performance may decline, and psychological issues such as anxiety and depression may develop, all of which have a negative impact on the quality of life (Celenay, 2016). Much attention has been paid to evaluating the efficacy of various treatments aimed at preventing or alleviating non specific neck pain (Blangsted, 2008). The most commonly used modalities of treatment are medications, physical therapy and exercise (Bogduk, 2007). It has been found that exercise therapy is helpful to non-specific neck pain (Linton, 2001). Exercise is one of the most commonly used forms of recovery of subjects with neck pain in order to recover muscle strength, flexibility and stamina, to regain damaged tissue, and to add to the ability to perform daily life activities (Wolsko, 2003) Studies found isometric exercises, neck stabilization exercises, and strength training (as a form of rehabilitation) had beneficial effects on neck pain, reduced discomfort and improved function (Ghodrati, 2017). Some methods additional to exercises can also be used in the rehabilitation process to regain function and relieve pain. Manual therapy to the soft tissue and joints can be a useful way to restore ROM, reduce pain, and improve function.

Manual treatment has been used to relieve neck pressure, through manipulation or mobilization. Past research showed promising results in reducing neck pain in patients with cervical and thoracic spine activation / manipulation techniques (Celenay, 2016). Evidence-based treatments have compared the short- and long-term effects of combination therapy (manual therapy plus exercise) for the treatment of non-specific neck pain, along with using other therapies like electrotherapy, medication, acupuncture and patient education. Combination therapy has been the most effective approach so far, according to some reports. There is also evidence supporting the effects of exercise therapy on neck pain and work in the short and long term. The exercise programs differ in strength, duration and frequency (Ghodrati, 2017). While manual therapy was found to be superior to manual therapy intervention alone in conjunction with different exercise methods, there was a lack of randomized clinical trials to evaluate manual therapy and stabilization exercises in the treatment of mechanical neck pain (Celenay, 2016). Because particular muscle weakness tends to be associated with pain, exercises designed to enhance spinal stabilization have gained prominence in the conservative care of patients with spinal pain; however, evidence of this approach's efficacy has been limited to date (Dusunceli, 2004). This form of exercise has become increasingly common in treating spinal back pain. While stabilization exercises applications in low back pain have become popular, there are few randomized clinical trials examining the efficacy of cervical and scapulothoracic stabilization exercises to treat mechanical neck pain (Celenay, 2016). (Celenay, 2016). It is an exercise method which, like its counterpart in the lumbar spine, aims to improve the inborn mechanisms by which the cervical spine maintains a stable, injury-free state. This is achieved through a series of exercises that are relatively simple in terms of time and resources, but are complex in physiology. (Dusunceli, 2009). The purpose of spinal stabilization exercises was to reduce neck pain by stimulating deep muscles and decreasing surface muscle over activity (Celenay, 2016) Exercises for neck stabilization comprising of specific exercise regimes; It focuses on general functional and postural neck and scapular musculature development. Usually the neck stabilization exercise given in the previous studies include: (Dusunceli, 2009) stretching exercises of the cervical, shoulder, chest, and scapular muscles, cervical isometrics and strengthening exercises for interscapular, shoulder, and upper extremity.

Since non specific spinal pain is associated with psychological aspect, it is necessary to address cognitive level of patient. Cognitive functional therapy is also gaining popularity in treating non-specific low back pain along with Spinal stabilization exercise. Since non-specific chronic low back pain (NSCLBP) is a multidimensional chronic health condition where an interplay of psychological (e.g. false attitudes, pain-related anxiety and emotional distress), social (e.g. life stress) and lifestyle factors (e.g. inactivity, poor sleep) combined with unhelpful behavioral responses to pain (e.g. preventive treatment and avoidance behaviors) contributes to vicious cycle of pain, distress and disability (Chen, 2018). In addition, calls were made to treat NSCLBP as a mental health condition, addressing beliefs of negative illness, attitudes, and behavioral reactions to help people handle their problem themselves (O'Sullivan, 2018). Cognitive functional therapy (CFT) has been developed as an NSCLBP customized behavioral self-management approach that helps people appreciate their pain from a biopsychosocial perspective, build trust to participate with normal movement and goal- related behaviors, and adopt a healthier lifestyle (O'Sullivan, 2018). Cognitive functional therapy (CFT) is an integrated, personcentered, goal-orientated management approach for CNLBP. The focus of this process is directed by the findings taken from the multidimensional examination, with regard to the indicated primary contributing factors across the different domains linked to the patient's disorder. Developing a strong clinical alliance, utilizing motivational interview techniques, underpins this process. A recent randomized controlled trial has shown that CFT resulted in superior long-term outcomes of reduced disability, pain intensity and episodes, fear, improved mood, reduced need for ongoing care and sick leave, when compared to physiotherapy-led manual therapy and stabilizing exercises (O'Sullivan, 2018).

Cognitive Functional Therapy (CFT) is a new, patient-centered therapeutic treatment that explores several NSCLBP aspects. This approach focuses on modifying patient attitudes, addressing their concerns, informing them on pain mechanisms, raising understanding of their body's regulation during pain- provoking functional activities, teaching them to minimize repetitive trunk muscle activity, and improving behaviors associated with pain-provoking movements and postures (O'Sullivan, 2012) The underlying clinical thinking construct directs the therapist to recognize the role of patho-anatomical factors, neurophysiological processes, cognitive and psychosocial influences, lifestyle and physical factors such as maladaptive movement patterns, distortion of the body structure and deconditioning of muscles. [30] CFT varies significantly from Cognitive Behavior Therapy (CBT) mainly in the alignment of emotional factors with the physical factors. Although CBT is basically a psychological therapy aimed at changing the way an person handles and copes with their pain, CFT also involves the direct challenging of maladaptive behaviors in a manner that is cognitively integrated, functionally realistic and graded. [31] There is evidence of the efficacy of CFT in people with NSCLBP, with disability reduction, pain severity and pain-related fear as well as depression

and anxiety retained at 1-year follow-up compared with manual therapy and exercise (Vibe Fersum, 2013).

MATERIALS AND METHODS

An experimental study was conducted with data collected from KTG Hospital, K.C General Hospital and Ravi Kirloskar Memorial Hospital, Bangalore.. Fourty subjects of age group between 40 to 60 were recruited randomly into two groups of twenty subjects each by convenience sampling. Consent was obtained from them prior to the study. Inclusion criteria comprised both male and female subjects, Age: 40 to 60 years, Subjects who are diagnosed with non-specific neck pain by orthopedician. Neck pain defined as non-specific neck pain without specific, identifiable etiology (i.e. infection, inflammatory disease), but which can be reproduced by neck movement or provocation tests in the location of the dorsal part of the neck in an area limited by a horizontal line through the most inferior portion of the occipital region and a horizontal line through the spinous process of the first thoracic vertebra [26],Generalized neck pain for more than 6 weeks with symptoms provoked by neck postures, movements, or palpation, Severity of pain : 7 or >7 in NPRS, Subjects who are voluntary willing to participate and can fill questionnaires in English language. The history of cervical spine injury or surgery, if their neck pain was secondary to other conditions (including neoplasm, neurological diseases or vascular diseases), cervical spinal stenosis or bilateral upper extremity symptoms, 2 or more positive radicular signs consistent with nerve root compression (muscle weakness involving a major muscle group of the upper extremity, diminished upper extremity, deep tendon reflex, diminished or absent sensation to pinprick in any upper extremity, dermatome), severe referred pain in the related dermatome (more than 7 cm on 0-10 cm scale) in the upper extremities, Infection or inflammatory arthritis in the cervical spine, Poor general health status that will interfere with the exercises during the study, Pain with any cause in or around the scapula, shoulder, upper extremity and lumbar spine that will prevent stabilization of these structures,Uncooperative patient. were excluded from the study. The included subjects were then divided into two groups: Subjects in both the groups were requested to fill Neck Disability Scale Questionnaire and Numerical pain rating scale. The data obtained served as pre intervention values of outcome measures. Subjects in Group I underwent Cognitive Functional therapy and subjects in Group II were performed Stabilization exercises, details of which are mentioned below. After 12 weeks of intervention, post intervention values of outcome measures were collected and analyzed using statistical tools to reach a conclusion.

Group A: Twenty subjects who were treated with Cognitive functional therapy.

Group B: Twenty subjects who underwent Neck Stabilization Exercise

Statistical analysis were performed by using SPSS software for window and p-value will be set as 0.05 (1 tailed Hypothesis). Descriptive statistics and Chi-square (x2) were used to analyze the base line demographic data. Wilcoxon signed-rank test and Mann-Whitney U test were used to find out statistical significance 'within group' and 'between groups' respectively. Microsoft Excel was used to prepare graphs and charts, wherever needed.

Procedure

Group A- Cognitive functional therapy

There were e three main components to the intervention

1. ***Making sense of pain:*** This 'cognitive component' was helped the patient 'make sense' of their pain based on the multidimensional factors identified within the interview and clinical examination. Unhelpful beliefs were dispelled and goals for behavior change were agreed upon. Personal modifiable factors, pain perception and underlying factors of neck pain were clearly explained.
2. **Exposure with 'control': This stage was consist of:**
   2a. **Functional movement exercises:** This provided subjects with strategies to normalize posture and movement behaviors that they nominate as painful, feared or avoided. This approach were follow a 'graded exposure' model where the subject were gradually exposed to valued and previously pain provocative, feared and or avoided tasks. This was reinforced with feedback and awareness of disengaging in protective body responses.
   2b. **Functional integration:** The new postural and movement behaviors were integrated into each person's nominated pain provocative functional activities linked to their goals in order to generalize learning and build self-efficacy.
3. **Lifestyle change:** This included promotion of gradually increasing physical activity if not already doing sufficient, to 3-5 days a week based on preference and tailored to clinical presentation, as well as advice regarding sleep habits and stress management if relevant. Visual bio-feed backs maybe administered for better understanding of movement for the patient.
4. The initial session was 1 hour and follow-ups 30-45 min. Patients was seen on a weekly basis for the first 3 sessions and then was progressed to 1 session every 2-3 weeks during the 12 weeks intervention period as required.

Group B Procedure of Neck Stabilization Exercise

Sessions began with postural re-education by having the patient sit with front and side mirror views to find a neutral balanced position of the lumbar and cervico-thoracic spine. After a 5-6-min jogging period, stretching exercises of the cervical, shoulder, chest, and scapular muscles (approximately 10 min) were performed in the standing position. Subsequently, cervical isometrics were performed in the supine position with the head supported on a pillow with a towel roll under the neck, and isometric exercises were performed in the seated position by resisting at the forehead (cervical flexion, extension, rotation and side-bending) or off the edge of a table against gravity for 10 sec with 15-sec breaks between holds with 10-15 repetitions in a progressive manner. To train the interscapular, shoulder, and upper extremity musculature, varying degrees of upper extremity movement exercises were performed, progressing from unilateral arm raises, to reciprocal arm raises, to bilateral arm raises. For the first week, exercises were carried out in the supine position with 10 repetitions, and then progressed to sitting and standing position with 15 repetitions. Also, unilateral arm raises were performed in the kneeling position with the same repetitions. During the resistance exercises, 3 distinct colors of Thera-Band tubing (red, green and blue) representing differing resistances (as kg of force at 100% elongation, 6/2.7, 7/3.1 and 9.5/4.3, respectively) were used in a progressive manner by increasing the density of TheraBand tubing each week. In addition, dumb-bell exercises for upper extremity and shoulder muscles (seated shoulder presses, lateral and front arm raises, hammer curls) were used for 2 sets of 15 repetitions with weights varying from 1 to 2 kg. A 5-min rest was taken between sets. Patients were instructed to maintain a neutral position at all times during the exercises. Each session was around 1 to 1.25 h. At the end of the 3-week , the physiotherapist was describe the home training programme involving stretching and stabilization exercises to be performed 3 times per week till 12th week.

RESULTS

Forty neck pain subjects of age group between 40 to 60 were recruited randomly into two groups of twenty. Group A was treated with cognitive functional therapy and Group B was neck stabilization exercises

Table 1. Baseline data for demographic variable

Sl.No:	Variable	Group A	Group B	Þ-value	t-value
1	Age	45.10±4.53	44.05±5.26	>0.503	0.67675
2	Gender	12/8	13/7	>0.744	0.1067

Data are mean ± standard deviation (sd). In the Group A, the mean age is 45.10and sd is 4.53, in the Group B, the mean age is 44.05 and sd is 5.26, which was not statistically significant (p value &gt.0.503) (t-value is 0.67675). In the Group A, there were 12 males & 8 females, in the Group B, there were 13 males &7 females, which were not statistically significant (Þ-value >0. 1067). In summary data were homogenous among both groups

Table 2. Baseline data for outcome variables

Sl.No:	Variable	Group A	Group B	Þ-value	t-value
1	NDI	25.80±7.24	26.65±7.94	>0.596	-0.52748
2	NPRS	6.05±1.23	6.20±1.64	>0.549	-0.5951

In the Group A, the mean NDI score was 25.80 with standard deviation of 7.24, in the Group B, the mean NDI score is 26.65 with standard deviation of 3.24 which was not statistically significant (Þ-value >0. 596)(t-value is 0.5951). In the Group A, the mean NPRS score was 6.05 with standard deviation of 1.23, in the Group B, the mean NPRS score is 6.20 with standard deviation of 1.64 which was not statistically significant (Þ-value >0.549)(t-value is 0.5951).

Table 3. Pre-Post in Experimental group A

Sl.No:	Variable	Pre	Post	Þ-value	z-value
1	NDI	25.80±7.24	9.70±4.60	<0.00008	-3.9199
2	NPRS	6.05±1.23	3.15±0.93	<0.0003	-3.6214

In the Group A, the pre NDI score was 25.80 with standard deviation of 7.24 was decreased to post mean score was 9.40 with standard deviation of 4.60 which was statistically significant (Þ-value <0.00008)(t value is -3.9199). In the Group A, the pre NPRS score was 6.05 with standard deviation of 1.23 was decreased to post mean score was 3.15 with standard deviation of 0.93 which was statistically significant (Þ-value <0.0003) (t value is -3.6214).

Table 4. Pre-Post in Group B

Sl.No:	Variable	Pre	Post	Þ-value	z-value
1	NDI	26.65±7.94	14.00±3.76	<0.0002	-3.7236
2	NPRS	6.20±1.64	4.05±1.05	<0.0003	-3.6214

In the Group B, the pre NDI score was 26.65 with standard deviation of 7.94 was decreased to post mean score was 14.00 with standard deviation of 3.76 which was statistically significant (Þ-value <0.0002) (t value is -3.7236). In the Group B, the pre NPRS score was 6.20 with standard deviation of 1.64 was decreased to post mean score was 4.05 with standard deviation of 1.05 which was statistically significant (Þ-value <0.0003) (t value is -3.6214).

Table 5. Difference between groups

Sl.No:	Variable	Group A	Group B	Þ-value	t-value
1	NDI	9.70±4.60	14.00±3.76	<0.005	-2.82673
2	NPRS	3.15±0.93	4.05±1.05	<0.021	-2.29925

However when comparing between group the mean NDI post score in Group A was 9.70 with a standard deviation 4.60 and the mean NDI post score in Group B was 14.00 with a standard deviation 3.76 which was statistically significant (p value <0.005) (t - value is 2.82673). The mean NPRS post score in Group A was 3.15 with a standard deviation 0.93 and the mean VAS post score in Group B was 4.05 with a standard deviation 1.05 which was statistically significant (p value <0.021) (t - value is 2.29925). Hence Group A was better than group B

DISCUSSION

Neck pain is well known to be one of the most common musculoskeletal disorders among individuals, especially in those professionals who spend most of their time in non-active positions, such as sitting. [45] Neck disorders are widespread, debilitating to various degrees, and costly. Visits to primary care providers, sick leave, and the resulting lack of productive potential are responsible for a large percentage of direct health care costs associated with neck disorders. In the available literature, electrotherapy and exercise have been identified as efficient treatments for managing disability, pain severity, and quality of life in individuals with non specific neck pain. [31] The resulting effect size and clinically relevant differences, on the other hand, are minimal to moderate, with significant variation between studies. The treatment of cervical disorder pain has long been a source of consternation among health care providers. There are multiple debates in the literature on the use of various exercises and types of other modalities at various stages of pain, with or without an exercise regimen, and the answer is inconclusive. [32] The purpose of the study was to compare effect of cognitive functional therapy and neck stabilization exercise to reduce pain and improve function in subject with non specific neck pain among middle aged population. In the present study, total 40 subjects were divided into two different study groups; the first group underwent cognitive functional therapy, the second group underwent neck stabilization exercises. All the included subjects received the allocated treatment for the complete study duration with no drop out. The outcome measures used in the study were Neck Disability Index (NDI) and the Numerical pain rating scale (NPRS), the reliability and validity of the scales used have already been discussed previously. The data analysis in this study suggested that the subjects in all two groups showed statistically significant improvements in pain and functional outcome measures post intervention. However, the difference in the values of outcome measures between the Groups was also found to be statistically significant which means that the cognitive functional therapy regime appeared as a favorable treatment preference when compared to neck stabilization exercises.

In this study group who received cognitive functional therapy and found effective to reduce pain and improve their function could be due to Awareness of activity and patient participation playsan important rolein subjective painrelief and normalizing activity of a patient (Peter O'Sullivan 2007) The efficiency of cognitive functional therapy in postural control depends on how patient participation in cognitive functional therapy desensitizes central sensitization changes. Pain generatedby the forebrainis less amplifiedto CNS (ongoing peripheral nociceptorinput from intervertebral disc) (Peter O'Sullivan Physical Therapy, 2018. The non-specific treatment effect, also referred to as placebo effect, can be due to the attention, interest, and concern shown by the physiotherapist, and to the perceptions of the treatment effects of the patients. There is also evidence that the release of endogenous opioid peptides mediates the placebo-induced analgesic effect. [33] According to Zubeita etal, the cognitive and emotional processes involved during the administration of a placebo, are capable of triggering internal mechanisms that alter physiology. It includes a network of brain regions, including rostral anterior cingulate, prefrontal and orbitofrontal dorsolateral cortices, insula, nucleus accumbens, amygdala, medial thalamus, and periaqueductal gray. Opioid and dopamine neurotransmission in these areas modulate various elements of the placebo effect, which appear to include the representation of its subjective value, updates of expectations over time, changes in affective state, and changes in pain ratings. [34] The result obtained in this study showed that the subjects in group B who received isometric exercises showed significant improvement post intervention and thus the exercises alone were also effective in improving outcomes. One explanation for this could be that isometric exercise increases muscle strength and provides a stable base for movements. Ylinen etal reported that isometric neck exercise increases muscle strength in neck flexors by 110 percent, extensors strength by 69 percent and strength in rotators by 76 percent. [35] Multiple studies have shown that muscle atrophy in the neck is closely associated with pain in the neck. The reduction in muscle strength may be due to the inhibitive effect of pain and changes in muscle structures. [50][51] Muscle weakness, particularly in deep muscles, can affect the condition of the spinal posture and may lead to postural disorders, which may increase pain, and further muscle weakness may result from subsequent pain. Panjabi [36] hypothesized that muscles that have direct attachments to the vertebrae are responsible for the segmental stability through the control of the neutral zone. Exercises prescribed targeting the neck and shoulder

with the objective of enhancing strength have been found to be very effective in breaking the pain cycle and increasing motor control. Experimental studies have shown that skeletal adaptations can occur after four weeks in different types of skeletal muscle fibre, if the training intensity is adequate. The exercise regimen recommended for the cervical musculature and the muscles of the scapula may have strengthened the proximal. Stability of the area of the head and neck. In addition, exercises have been shown to increase blood supply and consumption of muscle glycogen, resulting in a beneficial impact on stability and function. [37] Strengthening exercises also leads to improving the metabolism of proteins, which helps to heal a sore muscle and enable them to handle pressure and stress better as the muscle gets stronger. [38] In the present study, even though the both treatment group showed statistically significant improvement, the specific effect obtained in Group A where subjects received cognitive functional therapy exercises was relatively much higher in relation to its smaller nonspecific effect. For normal functioning, normal pain free ROMs are necessary. The components of NDI are linked directly to the pain of the patients. The drop in NDI scores seen in all participants could be due to pain relief and ROM improvement. Vernon and Mior [39] have shown that the NDI is responsive to change and significantly correlates with NPRS. The difference of between group values of all the two outcomes measures i.e. NDI, NPRS were statistically significant; a finding that has 2 main implications for clinicians and researchers. First, because treatment given to Group A was clearly very effective at reducing pain, with patients experiencing large decreases over the study period, its clinical use is recommended. Second, our study implies that most of the improvement gained in Group A was from the treatment alone and not due not to the nonspecific effects. Further investigation of these nonspecific effects may lead to substantial enhancement of many clinical interventions. However there were few limitations identified The treatment duration of the study was 2 weeks which could have reduced the efficacy of isometric exercise to enable muscle to undergo neuromuscular and physiological changes related to decrease in muscle pain, The placebo effect was not taken into account in attaining statistically significant results in Group A subjects, Long term effects are not seen and Less sample size. Hence this study accept experimental hypothesis and reject null hypothesis that there will be a significant difference in cognitive functional therapy to reduce pain and improve function in subjects with non specific neck pain.

CONCLUSION

Based on the study's findings and review of supporting evidence, this study accepts the experimental hypothesis while rejecting the null hypothesis. Thus the current study concludes that cognitive functional therapy is a preferable treatment option in patients with non specific neck pain in terms of pain relief and function improvement.

REFERENCES

Ariens GA, Bongers PM, Hoogendoorn WE, van der Wal G, van Mechelen W. High physical and psychosocial load at work and sickness absence due to neck pain. Scand J Work Environ Health 2002;28:222-31

Asgari-Ashtiani A R, Ebrahimi-Takmajani E, Torkaman G, Amiri M, Mohammadi M. The Effects of Stabilization Exercises and Maximum Isometric Exercises on Fear Avoidance of Belief in Chronic Non-Specific Neck Pain . jrehab. 2014; 15 (2) :22-31.

Barton PM, Hayes KC. Neck flexor muscle strength, efficiency, and relaxation times in normal subjects and subjects with unilateral neck pain and headache. Arch Phys Med Rehabil 1996; 77:680-7

Binder A. The diagnosis and treatment of nonspecific neck pain and whiplash. Eura Medicophys. 2007;43(1):79-89

Blangsted AK, Sogaard K, Hansen EA, Hannerz H, Sjogaard G. One-year randomized controlled trial with different physical-activity programs to reduce musculoskeletal symptoms in the neck and shoulders among office workers. Scand J Work Environ Health 2008;34:55-65.

Bogduk N, McGuirk B. Définition. In: Bogduk N, editor. Prise en charge des cervicalgies aiguës et chroniques. Paris: Elsevier; 2007: 1-2

Bongers, Paulien & Ijmker, Stefan & van den Heuvel, Swenne & Blatter, B. Epidemiology of work related neck and upper limb problems: Psychosocial and personal risk factors (Part I) and effective interventions from a bio behavioural perspective (Part II). Journal of occupational rehabilitation. 2006; 16: 279-302.

Borghouts JA, Koes BW, Bouter LM. The clinical course and prognostic factors of non- specific neck pain: a systematic review. Pain 1998;77:1e13

Carragee EJ, Haldeman S, Nordin M, et al. The burden and determinants of neck pain in the general population: results ofthe Bone and Joint Decade 2000-2010 Task Force on neck pain and its associated disorders. Spine 2008;33:S39-51

Cassou B, Derriennic F, Monfort C, et al. Chronic neck and shoulder pain, age, and working conditions: longitudinal results from a large random sample in France. Occup Environ Med 2002;59:537-44

Celenay ST, Akbayrak T, Kaya DO. "A Comparison of the Effects of Stabilization Exercises Plus Manual Therapy to Those of Stabilization Exercises Alone in Patients With Nonspecific Mechanical Neck Pain: A Randomized Clinical Trial", (J Orthop Sports Phys Ther. 2016 Feb;46(2):44-55

Celenay, Seyda & Ozer Kaya, Derya & Akbayrak, Türkan. "Cervical and scapulothoracic stabilization exercises with and without connective tissue massage for chronic mechanical neck pain: A prospective, randomized controlled trial.", Manual therapy. 2016; 21: 144-50

Chen, Y., Campbell, P., Strauss, V. Y., Foster, N. E., Jordan, K. P., & Dunn, K. M. Trajectories and predictors of the long? term course of low back pain: Cohort study with 5?year follow? up. Pain. 2018; 159(2): 252-260

Cherkin, D.C., Sherman, K.J., Balderson, B.H., et al. Effect of mindfulness-based stress reduction vs cognitive behavioral therapy or usual care on back pain and functional limitations in adults with chronic low back pain. JAMA. 2016; 315 (12): 1240.

Chiu TT, Sing KL. Evaluation of cervical range of motion and isometric neck muscle strength: reliability and validity. Clin Rehabil 2002; 16; 851-858

Côté P, Cassidy JD, Carroll L. The treatment of neck and low back pain. Medical Care. 2001; 39(9):956-67.

Côté P, Kristman V, Vidmar M, et al. The prevalence and incidence of work absenteeism involving neck pain: a cohort of Ontario lost-time claimants. Spine 2008;33:S192-8

Dusunceli, Yesim & Ozturk, Cihat & Atamaz Calis, Funda & Hepguler, Simin & Durmaz, Berrin. Efficacy of neck stabilization exercises for neck pain: A randomized controlled study. Journal of rehabilitation medicine : official journal of the UEMS European Board of Physical and Rehabilitation Medicine. 2009 Jul;41(8):626-31

Ehsani F, Mosallanezhad Z. Epidemiological study on neck pain in office workers in Semnan, risk factors and consequences. Physical Treatments. 2012; 1(1):17-21

Fernández-de-las-Pe-as C, Simons DG, Cuadrado ML, Pareja JA. The role of myofascial trigger points in musculoskeletal pain syndromes of the head and neck. Current Pain. and Headache Reports. 2007; 11(5):365-72.

Fersum, Kjartan & Smith, Anne & Kvåle, Alice & Skouen, Jan & O'Sullivan, Peter. Cognitive Functional Therapy in patients with Non Specific Chronic Low Back Pain A randomized controlled trial 3?year follow up. European Journal of Pain. 2019 Sep;23(8):1416-1424

Ghodrati M, Mosallanezhad Z, Shati M, Rastgar Koutenaei F, Nourbakhsh M R, Noroozi M. The Effect of Combination Therapy; Manual Therapy and Exercise, in Patients With Non-Specific Chronic Neck Pain: A Randomized Clinical Trial. PTJ. 2017; 7 (2) :113-121

Griffiths, Cathrin & Dziedzic, Krysia & Waterfield, Jackie & Sim, Julius. Effectiveness of Specific Neck Stabilization Exercises or a General Neck Exercise Program for Chronic Neck Disorders: A Randomized Controlled Trial. The Journal of rheumatology. 2009 Feb;36(2):390-7.

Hides JA, Richardson CA, Jull GA. Multifidus muscle recovery is not automatic after resolution of acute, first-episode low back pain. Spine 1996; 21:2763-9

Hoftun GB, Romundstad PR, Zwart JA, Rygg M. Chronic idiopathic pain in adolescence - high prevalence and disability: The young HUNT study 2008. Pain. 2011; 152(10):2259-66

Hogg-Johnson S, van der Velde G, Carroll LJ, et al. P. The burden and determinants of neck pain in the general population: results of the Bone and Joint Decade 2000-2010 Task Force on Neck Pain and Its Associated Disorders. Spine. 2008;33:S39-S51

Jull GA, Falla D, Vicenzino B, Hodges PW. The effect of therapeutic exercise on activation of the deep cervical flexor muscles in people with chronic neck pain. Manual Therapy. 2009; 14(6):696-701

Kaka, Bashir & Ogwumike, Omoyemi & Ogunlade, Samuel & Adeniyi, Ade. Effects of neck stabilization and dynamic exercises on pain, disability and fear avoidance beliefs in patients with non-specific neck pain; a randomized clinical trial. Arch Physiother Glob Res. 2015; 19 (3): 17-29

Lahad A, Malter AD, Berg AO, et al. The effectiveness of four interventions for the prevention of low back pain. JAMA 1994;272:1286e91

Linton SJ, van Tulder MW. Preventive interventions for back and neck pain problems: what is the evidence? Spine 2001;26: 778-87

Meziat Filho, Ney & Lima, Maicom & Fernandez, Jessica & Reis, Felipe. Cognitive Functional Therapy (CFT) for chronic non-specific neck pain. *Journal of Bodywork and Movement Therapies.* 2018 Jan;22(1):32-36

Ng, Leo & Caneiro, JP & Campbell, Amity & Smith, Anne & Burnett, Angus & O'Sullivan, Peter. Cognitive functional approach to manage low back pain in male adolescent rowers: A randomised controlled trial. *British journal of sports medicine.* 2015 Sep;49(17):1125-31.

O'Sullivan P. It's time for change with the management of non-specific chronic low back pain. BJSM. 2012;46:224-7

O'Sullivan, P. B., Caneiro, J. P., O'Keeffe, M., Smith, A., Dankaerts, W., Fersum, K., & O'Sullivan, K. Cognitive functional therapy: An integrated behavioral approach for the targeted management of disabling low back pain. Physical Therapy. 2018; 98(5): 408-423.

O'Sullivan, Kieran & Dankaerts, Wim & O'Sullivan, Leonard & O'Sullivan, Peter. Cognitive Functional Therapy for Disabling, Nonspecific Chronic Low Back Pain: Multiple Case- Cohort Study. Physical therapy. 2015 Nov;95(11):1478-88

Tsakitzidis G, Remmen R, Dankaerts W, Van Royen P. Non-specific neck pain and evidence-based practice. European Scientific Journal. 2013; 9(3)

Vibe Fersum, K., O'Sullivan, P., Skouen, J. S., Smith, A., & Kvale, A. Efficacy of classification?based cognitive functional therapy in patients with non?specific chronic low back pain: A randomized controlled trial. European Journal of Pain. 2013; 17(6): 916-928

Wolsko PM, Eisenberg DM, Davis RB, Kessler R, Phillips RS. Patterns and perceptions of care for treatment of back and neck pain: results of a national survey. Spine 2003; 28: 292-297

Yesil, Hilal et al. "Does the Use of Electrotherapies Increase the Effectiveness of Neck Stabilization Exercises for Improving Pain, Disability, Mood, and Quality of Life in Chronic Neck Pain?: A Randomized, Controlled, Single-Blind Study." SPINE 43 2018 Oct 15;43(20):E1174-E1183

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