

The effectiveness of mobilization and manual therapy on non-specific neck pain - A literature review

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Abstract

Introduction: *Non-Specific neck pain is one of the common musculoskeletal problems that affects most working age. Non-Specific Neck pain causes problems as it relates to disability. Pain is the typical worrying sign for the patient. The prevalence is highest in middle age, with women being affected more than men. The prevalence of non-specific neck pain varies, with a mean point prevalence of 7.6% (range 5.9–38.7%) and mean lifetime prevalence of 48.5% (range 14.2–71.0%).*

Methods: *The aim of this study was to perform a systematic review of the literature of the effectiveness of manual therapy and mobilization for non-specific neck pain. A literature search of PubMed and CINAHL was performed. Inclusion criteria included randomized controlled trials of manual therapy and mobilization interventions in*

acute neck pain. Like Outcomes were used pain relief, disability/function, (Disability) and patient satisfaction. The PEDro scale was used for quality assessment of eligible studies.

Results: *The search identified 29 articles and 6 full-text articles were assessed. Two studies met the inclusion criteria. According to the pedro scale the study of Ruud Groeneweg et al met all the criteria and was evaluated with 11 points.*

Conclusion: *Both articular mobilization and manual therapy are effective in non-specific neck pain. In future studies, a larger number of studies should be taken into consideration to increase the level of reliability.*

Key words: *Non-Specific neck pain, RCT (Randomized controlled trial), reviews study, manual therapy, PEDro scale.*

Introduction

Pain in the neck is a common problem in people of working age, and an important cause of disability (Sarquis., 2016). Neck pain and other musculoskeletal pain is a common complaint in many developed countries, and an important cause of incapacity for work (Matsudaira, K., 2011).

In our study we include nospecific pain that causes pain with a postural or mechanical basis, often called cervical spondylosis. Non-specific neck pain may include some people with a traumatic basis for their symptoms (Binder A. I. 2008).

It is thought that about two thirds of people will experience neck pain at some time. The prevalence is highest in middle age, with women being affected more than men. The prevalence of neck pain varies widely between studies, with a mean point prevalence of 7.6% (range 5.9–38.7%) and mean lifetime prevalence of 48.5% (Patients with neck pain not uncommonly experience symptoms of dizziness/light headedness and unsteadiness (Sremakaew M., 2018). usually that patients have impaired proprioception and postural instability which account for these symptoms. Dizziness and unsteadiness have been shown to be predictors of both poorer recovery and poorer response to musculoskeletal treatment (Sremakaew M., 2018). There are numerous studies that use different treatment methods for the treatment of neck pain. We included spinal chiropractic treatment, mulligan therapy, Maitland therapy, massage, apparatus therapy etc.

In our study, we evaluated neck pain in active working ages excluding third age. How does the effect of manual therapy and mobilization affect neck pain? Non-specific neck pain has an average spread of 14.2 to 71.0% (Binder A. I. 2008).

In studies at Cochrane reviews investigated the effects of therapeutic interventions of neck pain with manipulation and mobilization and other therapy

such as exercise, acupuncture etc, concluded that there is too little evidence to recommend for or against these somatic therapies (Gross, A. R.,2004). In this review we evaluated the efficacy of manual therapy and mobilization for non-specific neck pain. Regardless of the cochrane database there are numerous studies evaluating the efficacy of mobilizations and manual therapy for neck pain.

Methodology

Literature Search

This systematic review study was based on data collected from electronic databases such as Pub Med, Medline, Cochane for the period 2010-2019. In data processing were taken five reviewers

(“S.V”, “A.L”, “E.C”), during the collection of materials there was a restriction on the studies as they were abstract and had to be paid for full study visibility, the studies were in English. Reviewers to collect this data used keywords such as “physiotherapy”, “rehabilitation”, “manual therapy”, “mobilization”, “neck pain”, “randomized trials”, “Pedro Scale”.

Inclusion Criteria

All studies included in this review were in English. The inclusion criteria in our study were the age of patients 25-45 years, although during the search we found a study evaluating the effects of manual therapy on neck pain in older persons, (Buyukturan, O., 2018). study evaluated the positive effects regarding pain relief, disability in neck pain. Another element of the criterion included in our study was nonspecific neck pain. All acute neck pain and randomized studies will help build the efficacy charts of studies included through the Pedro.

Exclusion Criteria

All other forms of study such as review, systematic review, case study was excluded in our study. We excluded from the study older persons, all forms of treatment that have nothing to do with manual therapy. In our study we also excluded patients who had previously undergone surgery of the cervical spine



TABLE 1: Eligibility Criteria for Including Studies in the Review

Topic	Inclusion Criteria	Exclusion Criteria
Participants	Patients 25-45 years old	More thea 80 years old
Intervention	A manual therapy intervention	
Comparison	Manual therapy combined with other therapy for example with physical therapy	Study examining an intervention focused on a specific pathology
Outcome	Pain relief and Neck Disability Index (NDI)	No measure of primary outcomes
Design	Randomized controlled trial	Review study, systematic study, case study

Data Extraction

Data extracted from the studies included authors' names and affiliations, study year, study design, sample size, randomization, participant characteristics, type and timing of interventions, primary outcomes, treatment effects, and key findings of the study. Data extraction was undertaken by 2 reviewers (S.V.S., A.L.Z). One reviewer (E.C.H) formatted a merged data extraction document.

FIG 1. PRISMA 2009 flow diagram. RCT, randomized controlled trial

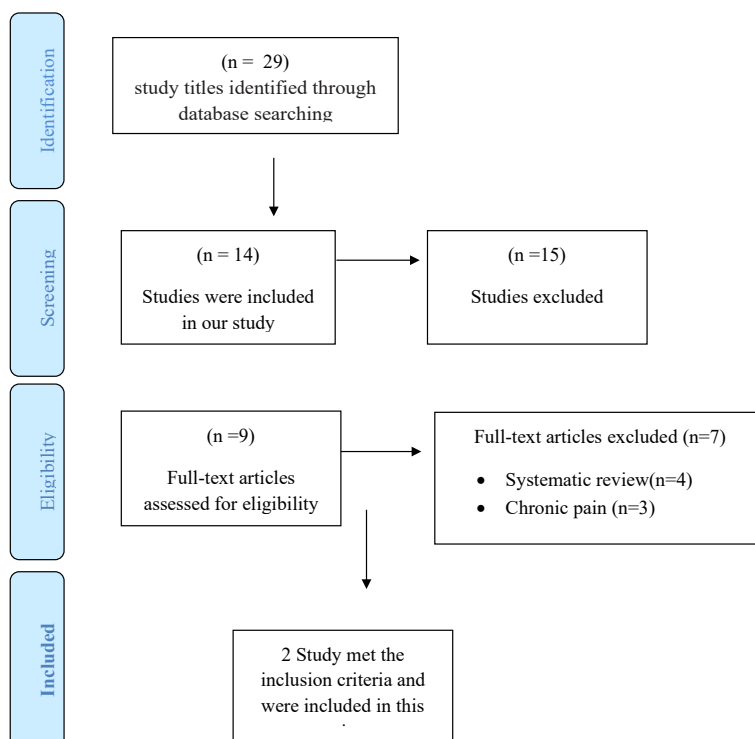


TABLE 2: Characteristics and key findings of the two studies included in the literature review

Study (year)	Follow up (The number of participants)	Study intervention	Trial design	Primary and Secondary Outcomes	Result
Ruud Groeneweg et al ⁷ (2017)	N=181 1 year follow-up	Gr 1MTU (Manual Therapy) Gr 2 PT (physical therapy)	RTC A pragmatic randomized controlled trial	Primary Outcomes 1. Neck Disability Index; 2.Numeric Rating Scale for Pain; 3.Global perceived effect (GPE); Secondary Outcomes 1. Disability and Health (ICF).	Statistically significant results only for GPE variables in the first 3 weeks of treatment in Manual therapy group compared to Physical therapy group. For the other variables there were no differences between the groups
Sremakaew M et al ⁸ (2017)	N=168 Six week follow up	Gr1. local neck treatment; Gr.2 local treatment plus tailored sensorimotor exercises; Gr.3 Local treatment plus balance exercises; Gr.4 Local treatment plus sensorimotor and balance exercises.	RCT single blind	Primary Outcomes 1.Postural sway, 2.Cervical joint position error; Secondary Outcomes 1.Gait speed; 2.Dizziness intensity; 3.Neck pain intensity; 4. Neck disability; 5.Pain extent and location; 6.Cervical range of motion ROM, 7.Functional ability; 8.Perceived benefit; 9.Quality of life.	There are significant differences between the intervention group and the control group.

TABLE 3

Author	1	2	3	4	5	6	7	8	9	10	11	Point
Ruud Groeneweg et al	1	1	1	1	1	1	1	1	1	1	1	11
Sremakaew M et al ⁸	1	1	1	1	0	1	0	1	1	0	1	8



Results

In the Prisma table which summarizes how literature is collected is shown in Fig. 1, from $n = 29$ studies identified by their title and about the impact and effects of manual therapy on nonspecific neck pain were excluded on the basis of exclusion criteria $n = 15$ and included on the basis of inclusion criteria number = 14 studies. Of these $n = 14$ studies, nine of them were complete articles and $n = 7$ were excluded because four studies were literature review and three studies treated chronic neck pain. At the end of our search only two of the studies met our study criteria.

In table number two they are specified the data for two studies that met the inclusion criteria in our study. The study of (Groeneweg, R., 2017), which was conducted in 2017, was a randomized pragmatic study involving patients aged 17-80 years with a one-year follow-up. Where patients were divided into two groups in one of the groups MT grup applied manual therapy on cervical articulation for nonspecific neck pain while the other group was PT grup who applied massage therapy, cervical traction, active-passive exercises, and muscle stretching on these patients. A large number of tests were applied, and the results confirmed the absence of significant differences between the two groups.

While in the (Sremakaew, M., 2018) study that was conducted in 2017, it was a randomized, blind study. Patients were divided into four groups, in the first group was applied local neck treatment, in the second group was applied local treatment plus tailored and sensorimotor exercise in the third group was applied local treatment combined with balance exercises and in the group of four local treatment was combined with sensorimotor and balance exercise. At the end of the study, general guidelines for the rehabilitation of patients suffering from non-specific neck pain were reported.

Table three presents results of evaluation according to PEDro scale. Both studies included in our study had a low risk of bias, as the study of (Groeneweg, R., 2017), had maximum scoring by PEDro scale while study of (Sremakaew, M., 2018) achieved satisfactory results of eight points.

The tests used in our study were numerous among them: NRS (numerical pain scale), NDI (disability index of neck movements), CEQ (reliability / expectation questionnaire, FABQ (confidence questionnaire and avoidance of fear), SP-36 short form -36, MCIC (minimal clinically significant change), GPE (global perceived effect), ICF (international classification of disability and health functioning, NRS-P (intensity of pain neck in the following weeks), Posture oscillations, walking speed, incorrect positioning of cervical vertebrae articulations, intensity of dizziness, degree and location of pain, neck amplitudes, quality of life.

Discussions

In the study of (Bautista-Aguirre, F., 2017) which was a randomized study, which evaluated the effect of manual therapy at the level of cervical and thoracic nerves in patients with chronic mechanical neck pain. This study involved 88 patients who were divided into three groups 1) cervical group (N. = 28); 2) thoracic group (N. = 30); and 3) control group (N. = 30). This study concludes that thrust manipulation is no more effective than placebo to induce immediate changes on mechano sensitivity of upper limb nerve trunks and grip strength in patients with chronic non-specific mechanical neck pain. Unlike our study which does reflect the positive results of manual therapy in neck pain.

In the study of (Langenfeld, A.,2015) it was a randomized study that assessed the effects of manual manipulations versus mechanically assisted manipulations of the thoracic column in patients with neck pain. This study concluded that both interventions will improve neck pain. This would be a significant finding, as thoracic spine manipulation for neck pain does not carry the same risk of injury as cervical spine manipulation. Study of (Langenfeld, A.,2015) had positive results for neck pain, like our study.

In the study of (Sun, Z. R., 2014), which was a randomized study, he evaluated the effect of Acupuncture for acute neck pain caused by stiff neck. In the study was involved thirty-six participants with acute neck pain, randomly divided into two groups. Participants in the control group will receive massage on the local neck region (5 min each session, three times a day for 3 days). In addition to massage, patients in the treatment group will receive acupuncture (one session a day for 3 days). At the end of the study, important clinical evidence was provided on the feasibility and efficacy of acupuncture treatment for stiff neck patients with acute neck pain. As in our study two of the studies included in literature review we notice positive results or confidential results that do not show obvious differences between groups. But we can say that most studies confirm the obvious positive results of the impact of manual therapy on nonspecific neck pain.

Limitations

The main limitation of this study is the literature review that includes only 2 randomized studies, which completed inclusion criteria. One of the studies did not even produce any visible results but only created the opportunity to use their protocol formally by clinical physiotherapists.



Conclusions

Both articular mobilization and manual therapy are effective in non-specific neck pain. In future studies, a larger number of studies should be taken into consideration to increase the level of reliability.

References

- Bautista-Aguirre, F., Oliva-Pascual-Vaca, Á., Heredia-Rizo, A. M., Boscá-Gandía, J. J., Ricard, F., & Rodríguez-Blanco, C. (2017). Effect of cervical vs. thoracic spinal manipulation on peripheral neural features and grip strength in subjects with chronic mechanical neck pain: a randomized controlled trial. *European journal of physical and rehabilitation medicine*, 53(3), 333–341. <https://doi.org/10.23736/S1973-9087.17.04431-8>.
- Binder A. I. (2008). Neck pain. *BMJ clinical evidence*, 2008, 1103.
- Buyukturan, O., Buyukturan, B., Sas, S., Karartı, C., & Ceylan, İ. (2018). The Effect of Mulligan Mobilization Technique in Older Adults with Neck Pain: A Randomized Controlled, Double-Blind Study. *Pain research & management*, 2018, 2856375. <https://doi.org/10.1155/2018/2856375>.
- Groeneweg, R., van Assen, L., Kropman, H., Leopold, H., Mulder, J., Smits-Engelsman, B. C. M., Ostelo, R. W. J. G., Oostendorp, R. A. B., & van Tulder, M. W. (2017). Manual therapy compared with physical therapy in patients with non-specific neck pain: a randomized controlled trial. *Chiropractic & manual therapies*, 25, 12. <https://doi.org/10.1186/s12998-017-0141-3>.
- Gross, A. R., Hoving, J. L., Haines, T. A., Goldsmith, C. H., Kay, T., Aker, P., Bronfort, G., & Cervical Overview Group (2004). A Cochrane review of manipulation and mobilization for mechanical neck disorders. *Spine*, 29(14), 1541–1548. <https://doi.org/10.1097/01.brs.0000131218.35875.ed>
- Langenfeld, A., Humphreys, B. K., de Bie, R. A., & Swanenburg, J. (2015). Effect of manual versus mechanically assisted manipulations of the thoracic spine in neck pain patients: study protocol of a randomized controlled trial. *Trials*, 16, 233. <https://doi.org/10.1186/s13063-015-0763-5>.
- Matsudaira, K., Palmer, K. T., Reading, I., Hirai, M., Yoshimura, N., & Coggon, D. (2011). Prevalence and correlates of regional pain and associated disability in Japanese workers. *Occupational and environmental medicine*, 68(3), 191–196. <https://doi.org/10.1136/oem.2009.053645>.
- Sarquis, L. M. M (2016). Classification of neck/shoulder pain in epidemiological research: a comparison of personal and occupational characteristics, disability, and prognosis among 12,195 workers from 18 countries. *Pain*, 157(5), 1028–1036. <https://doi.org/10.1097/j.pain.0000000000000477>.
- Sremakaew, M., Jull, G., Treleaven, J., Barbero, M., Falla, D., & Uthaiakup, S. (2018). Effects of local treatment with and without sensorimotor and balance exercise in individuals with neck pain: protocol for a randomized controlled trial. *BMC musculoskeletal disorders*, 19(1), 48. <https://doi.org/10.1186/s12891-018-1964-3>

- Sremakaew, M., Jull, G., Treleaven, J., Barbero, M., Falla, D., & Uthaikhup, S. (2018). Effects of local treatment with and without sensorimotor and balance exercise in individuals with neck pain: protocol for a randomized controlled trial. *BMC musculoskeletal disorders*, 19(1), 48. <https://doi.org/10.1186/s12891-018-1964-3>.
- Sun, Z. R., Yue, J. H., Tian, H. Z., & Zhang, Q. H. (2014). Acupuncture at Houxi (SI 3) acupoint for acute neck pain caused by stiff neck: study protocol for a pilot randomised controlled trial. *BMJ open*, 4(12), e006236. <https://doi.org/10.1136/bmjopen-2014-006236>.

