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Research Article

Effectiveness of Cyriax Manipulation with or without Home Exercise in Reducing Pain and Disability for Subject with Chronic Neck Pain

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Abstract

Neck pain is a common musculoskeletal condition, which causes substantial medical cost. Manipulative therapy is frequently used in the management of musculoskeletal pain. A frequently reported clinical feature of this treatment is the immediacy with which it appears to initiate improvement in pain and function. Total 60 patients were studied. Visual analogue scale and neck disability index were used. Total 60 patients were divided into two groups randomly. One group was given manipulation with home exercise; other was given manipulation without home exercise. Mean age of the participants was 38.80 ± 1.307 and 40.43 ± 1.122 years respectively. The present study found more than half of the respondents suffered from neck pain < 6 months in both group. Most of the respondents from both group suffered from moderate pain before treatment and it became mild pain after treatment. Mean Neck Disability Index was 23.97 ± 10.906 and 18.00 ± 7.239 in manipulation with home exercise and manipulation without home exercise group before treatment and after treatment it was 5.43 ± 4.724 and 6.10 ± 6.065. This study showed a relevant improvement in different functional level, decrease pain and neck disability by two therapeutic interventions but manipulation with home exercise showed better result than manipulation without home exercise.

Keywords: *Cyriax Manipulation; Home exercise; Chronic neck pain*

Introduction

Neck pain is a common musculoskeletal complain and is often associated with shoulder or arm pain. There is a paucity of information on effective treatment for neck and arm pain, including radiculopathy or cervico-brachial pain. Study recommends neck mobilization or manipulation, exercises and advice as the treatment for neck pain and arm pain. [1] Neck disorders are common, limit function, and are costly to individuals and society. Exercise therapy is a commonly used treatment for neck pain. The effectiveness of exercise therapy remains unclear. The effectiveness of exercise therapy to relieve pain, or improve function, disability, patient satisfaction, and global perceived effect in adults with mechanical neck disorders (MND). [2] Manipulation and mobilisation are often used, either alone or combined with other treatment approaches, to treat neck pain. If manipulation or mobilization improves pain, function/disability, patient satisfaction, quality of life, and global perceived effect in adults with acute, subacute or chronic neck pain with or without cervicogenic headache or radicular findings. [3] Bangladesh is a developing country and the industrialization process is also getting momentum. Now a day, various types of mechanical problems are increasing due to rapid industrialization and mechanization. Neck problem on of them and patients may suffer prolong period, ultimately they were burden to family and society. Cyriax manipulation plays a key role in improving pain, range of motion as well as functional activities patient. This study on manipulation technique of neck pain would offer the best hope for identification of the problems, develops new tools, take necessary steps to minimize suffering of this disorders.

Methodology

Study design: It was an experimental study

Outcome measure: Pain and neck disability index

Parameter

a. Visual analog scale
b. Neck disability index

Sample population: The sample population was consisted of male and female who complain of chronic neck pain and consult to the physician in selected hospital in Dhaka city.

Study area: The study was conducted National Institute of Traumatology and Orthopedic Rehabilitation in Dhaka city.

Number of beds -1000

Type of hospital- Orthopedic and Rehabilitation hospital, it is a tertiary level government hospital.

Facilities – Indoor and outdoor facilities

Study period: 1st January, 2015 to 30th April, 2015

Sample size: Following formula was used to determine the sample size.

$$n = \frac{z^2 pq}{d^2}$$

Here

n = the desired sample size
z = the standard normal deviate usually set at 1.96 which correspondents to 95% confidence level
p = 20.8%. [4] (Prevalence and risk factor of neck pain in elderly)
q = 1-p = 1.00-0.21, q = 0.79
d = degree of accuracy desired, usually set at 0.05%.
So, required sample size was 246. Researcher took 60 samples for time and fund limitation.

Inclusion Criteria

a. Those who were willing to give consent and participate for interview, irrespective of sex
b. Clinically diagnosed of chronic neck pain
c. Especially patients with radiating pain

Exclusion Criteria

a. Prolapsed cervical intervertebral disc patients are excluded
b. Patients with traumatic neck pain
c. Those who were mentally and physically handicapped
d. Immediate surgical intervention of cervical and upper limb

Sampling technique: Randomized sampling technique was applied

Data collection tools: A pretested, modified, interviewer administrated, semi-structured questionnaire was used to collect the data.

Data management and analysis: After collection data were entered into the computer into a data base in the software package. Statistical Package for the Social Sciences (SPSS) Version 16.0 was used.

Ethical consideration: Prior to the commencement of this study, the research protocol was approved by the research committee of the academic institution. The aims and objectives of the study along with its procedure, risks and benefits were explained to the respondents in easily understandable local language and then informed consent was taken from each. Then it was assured that all information and records will be kept confidential and used only for research purpose.

Limitation of the Study: This preliminary study had a number of limitations. The experimental nature study is risk for the participants. The sample size was comparatively small due to shortage of time and financial constrains of the research period and thus the result could not be generalized.

Results

Age in years	Manipulation with home exercise		Manipulation without home exercise	
	Frequency	Percentage	Frequency	Percentage
< 25	4	13.3	3	10
26-35	10	32.7	8	26.7
36-45	8	27	8	26.7
46-55	5	16.7	8	26.7
> 56	3	10	3	9.9
Total	30	100	30	100
Mean SD	38.80 ± 1.307		40.43 ± 1.122	

Table 1: *Distribution of participants by age (n = 60).*

The table 1 reveals that the mean age of the participants was 38.80 ± 1.307 and 40.43 ± 1.122 years respectively. About 32.7%, 27%, 16.7%, 13.3%, 10%, of the participants belonged to age group 26-35years, 36-45 years, 46-55 years, < 25 years, > 56 years among manipulation with home exercise group followed by 26.7% were 26-35years, 36-45 years, 46-55 years, 10% were < 25 years and 9.9% were > 56 years among manipulation without home exercise group.

Occupation	Manipulation with home exercise		Manipulation without home exercise	
	Frequency	Percentage	Frequency	Percentage
Student	3	10	4	13.3
Service holder	9	30	10	33.4
Business	7	23.3	4	13.3
Day labor	1	3.3	0	0
Housewife	9	30	12	40
Retried person	1	3.3	0	0
Total	30	100	30	100

Table 2: *Distribution of participants by occupation (n = 60).*

It is found that 30% of the participants were service holder, 30% housewife, 23.3% business, 10% student and 3.3% were retried person respectively of manipulation with home exercise compare to manipulation without home exercise, 40% of the participants were housewife, 33.4% service holder, 13.3% were business and 13.3% were students respectively.

Duration of neck pain	Manipulation with home exercise		Manipulation without home exercise	
	Frequency	Percentage	Frequency	Percentage
< 6 month	17	56.7	18	60
7-12 Month	10	33.3	12	40
> 12 month	3	10	0	0
Total	30	100	30	100

Table 3: *Distribution of participants by duration of neck pain (n = 60).*

Table 3 shows 56.7%, 33.3% and 10% of the participants suffered from neck pain < 6 months, 7 to 12 months and > 12 months of manipulation with home exercise followed by 60% and 40% suffered < 6 months and 7 to 12 months respectively.

Severity of pain (Before treatment)	Manipulation with home exercise		Manipulation without home exercise	
	Frequency	Percentage	Frequency	Percentage
Mild pain	0	0	5	16.7
Moderate pain	15	50	22	73.3
Severe pain	15	50	3	10
Total	30	100	30	100

Table 4: *Distribution of participants by severity of pain (before treatment) (n = 60)*

Table 4 found 50% of the participants suffered moderate pain and 50% severe pain before treatment of manipulation with home exercise compare to manipulation without home exercise, 16.7%, 73.3% and 10% of the participants suffered mild pain, moderate pain and severe pain before treatment respectively.

Severity of pain (after treatment)	Manipulation with home exercise		Manipulation without home exercise	
	Frequency	Percentage	Frequency	Percentage
No pain	8	26.7	9	30
Mild pain	21	70	19	63.3
Moderate pain	1	3.3	1	3.3
Severe pain	0	0	1	3.3
Total	30	100	30	100

Table 5: *Distribution of participants by severity of pain (after treatment) (n = 60).*

Table 5 found from the 26.7% of the participants had no pain. Of them 70% of the participants complain mild pain and 3.3% of the participants complained moderate pain after treatment of manipulation with home exercise whereas manipulation without home exercise , 30% of the participants had no pain. Of them 63.3% complained mild pain, 3.3% moderate pain and 3.3% severe pain after treatment respectively.

Treatment session	Manipulation with home exercise		Manipulation without home exercise	
	Frequency	Percentage	Frequency	Percentage
< 7	4	13.3	28	93.3
7-14	14	46.7	2	6.7
> 14	12	40	0	0
Total	30	100	30	100
Mean ± SD	15.10 ± 6.844		3.97 ± 3.314	

Table 6: *Distribution of participants by treatment session (n = 60).*

Table 6 reveals that the mean duration of treatment 15.10 ± 6.844. Among them 46.7%, 40%, and 13.3% of the participants took physiotherapy 7-14 sessions, > 14 sessions and < 7 sessions respectively of manipulation with home exercise compare to manipulation without home exercise, the mean duration of treatment 3.97 ± 3.314. Among them 93.3%, and 6.7% of the participants took physiotherapy < 7 sessions and 7-14 sessions respectively. None of the participants were taken > 14 sessions.

Neck Disability index	Manipulation with home exercise		Manipulation without home exercise	
	Frequency	Percentage	Frequency	Percentage
< 10	2	6.7	3	10
11-20	11	36.6	17	55.7
21-30	8	26.7	9	30
> 31	9	30	1	3.3
Total	50	100	30	100
Mean ± SD	23.97 ± 10.906		18.00 ± 7.239	

Table 7: *Distribution of participants by Neck Disability Index (Before treatment) (n = 60).*

Table 7 found that 36.6% of the participant informed 11-20, 30% were > 31, 26.7% were 21-30 and 6.7% were < 10 scale before treatment with the mean Neck Disability Index were 23.97 ± 10.906 of manipulation with home exercise compare to manipulation without home exercise, the mean Neck Disability Index were 18.00 ± 7.239. Of them 55.7% of the participant informed 11-20, 30% were 21-30, 10% were < 10 and 3.3% were > 31 scale before treatment.

Neck Disability index	Manipulation with home exercise		Manipulation without home exercise	
	Frequency	Percentage	Frequency	Percentage
0	4	13.3	4	13.3
1-10	23	76.7	23	76.7
11-20	3	10	2	6.7
30	0	0	1	3.3
Total	30	100	30	100
Mean ± SD	5.43 ± 4.724		6.10 ± 6.065	

Table 8: *Distribution of participants by Neck Disability Index (After treatment) (n = 60).*

Table 8 found 13.3% of the participant informed 0, 76.7% were 1-10 and 10% were 11-20 after treatment. The mean Neck Disability Index were 5.43 ± 4.724 of manipulation with home exercise compare to manipulation without home exercise the mean Neck Disability Index were 6.10 ± 6.065. Of them 13.3% of the participants informed 0, 76.7% were 1-10, 6.7% were 11-20 and 3.3% were 30 after treatment.

Study group	Mean		t-Value
Manipulation with home exercise	Pre test	Post test	21.108
	3.50 ± .508	1.77 ± .508	
Manipulation without home exercise	Pre test	Post test	9.872
	2.93 ± 0.521	1.80 ± .664	

Table 9: *Distribution of respondents by paired t- test was measured by pain intensity (Neck Disability Index)*

Table 9 shows that manipulation with home exercise showed better result than manipulation without home exercise.

Discussion

The study reveals that the mean age of the respondents were 38.80 1.307 years. This finding was similar to the study carried out by Kay TM., *et al*. Gross AR., *et al*. and Son KM., *et al*. [2,5,6] About 30% of the participants were service holder, 30% housewife, 23.3% business, 10% student and only 3.3% were retried person respectively of manipulation with home exercise compare to manipulation without home exercise, 40% of the participants were housewife, 33.4% service holder, 13.3% were business and 13.3% were students respectively. These findings were dissimilar to such literature review. The present study found more than half of the respondents suffered from neck pain < 6 months in both group. Most of the respondents from both group suffered from moderate pain before treatment and it became mild pain after treatment. Several studies supported these findings. [6,7,8,9,10] Mean duration of treatment was 15.10 ± 6.844 and 3.97 ± 3.314 in manipulation with home exercise and manipulation without home exercise group. These findings were similar to the study carried out by Gross AR., *et al*. editors [5] Mean Neck Disability Index was 23.97 ± 10.906 and 18.00 ± 7.239 in manipulation with home exercise and manipulation without home exercise group before treatment and after treatment it was 5.43 ± 4.724 and 6.10 ± 6.065. These findings were similar to the study carried out by Cramer H., *et al*. and En MC., *et al*. [9,11] Manipulation with home exercise showed better result than manipulation without home exercise. This finding was similar to the study carried out by Bahar Kavlak., *et al*. [12]

Conclusion

It is concluded that both manipulation with home exercise and manipulation without home exercise treatment bring significant improvement in patient with neck pain. This study showed a relevant improvement in different functional level, decrease pain and neck disability by two therapeutic interventions but manipulation with home exercise showed better result than manipulation without home exercise.

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