ORIGINAL ARTICLE

FREQUENCY OF NECK MYOFASCIAL PAIN SYNDROME AND ITS ASSOCIATION WITH SEVERITY OF PAIN AND DISABILITY IN PATIENTS WITH CERVICAL RADICULOPATHY; A CROSS-SECTIONAL STUDY

Sahib Rehman[1], Naeem Ullah[2], Nadia Gul[3], Obaid Ahmad Khalil[3], Arsheen[4], Syed Issam Ullah Jan[5]

ABSTRACT

Introduction: Vertebral nerve root malfunction-related disease is called cervical radiculopathy (CR), the clinical picture of which is pain spreading from the neck to the affected root. Myofascial pain syndrome (MPS) is the main cause of pain and disability in the working population. The aim of the study was to find the frequency of myofascial trigger points and their association with the degree of pain and disability in persons with cervical radiculopathy.

Material & Methods: A cross-sectional study was conducted. The sample size was 148 patients, recruited from physiotherapy departments of 2 hospitals in Peshawar, population size of 240, using non-probability convenience sampling technique. Data was collected from CR patients between the ages of 18 to 65. After meeting the eligibility criteria, participants were evaluated by using the numeric pain rating scale (NPRS) and neck disability index (NDI) to determine the level of pain and disability respectively. A 4-point criterion was used for the identification of myofascial trigger points.

Results: The study included 148 participants. Out of which 90 were males and 58 were females. The patient's mean age was 39.27 ± 13.59 years. There were 60.8% males and 39.2% females with a mean weight of 71.973 ± 11.77 kg and a mean height of 169.46 ± 8.59 cm. The mean score of MTrPs, NDI, and NPRS was 15.15 ± 3.28, 22.74 ± 6.34, and 5.80 ± 1.38 respectively. The correlation coefficients of NDI & MTrPs, NPRS & MTrPs, and NDI & NPRS were .868, .822, and .807 respectively.

Conclusion: There was a high prevalence of Myofascial Trigger Points in cervical radiculopathy patients, and Myofascial Trigger Points also had a strong correlation with the severity of pain and disability.

Keywords: Cervical Radiculopathy, Disability, Myofascial Pain, Pain Severity, Trigger Point.

Authors' Declaration: The authors declared no conflict of interest and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All authors contributed substantially to the planning of research, question designing, data collection, data analysis and write-up of the article.

Authors' Affiliation

[1]Senior Physiotherapist, Community Health Medial Complex Yanbu, Saudi Arabia
[2]Physiotherapist, Shifa Rehab & Research Centre, Peshawar
[3]Senior Physiotherapist, Irfan General Hospital, Peshawar
[4]Demonstrator, IPMR, Khyber Medical University, Peshawar
[5]Student, Sarhad University of Science and Information Technology, Peshawar

Corresponding Author

Sahib Rehman
Senior Physiotherapist,
Community Health Medial Complex Yanbu, Saudi Arabia
Email: sahibperhan17@gmail.com

This article may be cited as: Rehman S, Ullah N, Gul N, Khalil OA, Arsheen, Jan SI. Frequency of neck myofascial pain syndrome and its association with severity of pain and disability in patients with cervical radiculopathy; a cross-sectional study. Rehman J Health Sci. 2024;6(2). 156-163

Submitted: Sep 19, 2024 Revisions Submitted: Nov 13, 2024 Accepted: Dec 30, 2024

INTRODUCTION

A musculoskeletal condition known as myofascial pain syndrome (MPS) is characterized by motor, sensory, and autonomic symptoms that are brought on by

activated muscle trigger points. A condition involving malfunctioning of the cervical vertebral nerve roots is known as cervical radiculopathy (CR), and it is typically characterized by pain extending from the neck to the affected root.[1] Cervical radiculopathy is a condition that results in malfunction of the cervical nerve roots in the spine because space-occupying lesions, such as a disc hernia, declines in the disc's height, or degenerative alterations happen in the uncovertebral spaces in the anterior part of the spine and the zygapophyseal spaces posteriorly. A more recent study by the US military found that the incidence of cervical radiculopathy peaks in the third and fifth centuries of life, with a prevalence of 1.78 per 1000 persons-year (50–54 yrs old). The C7 (39.3% to 46.3%) & C6 (17.6% to 42.6%) spinal nerves are most frequently involved, albeit to differing degrees. Bilateral involvement is observed in 5-36 percent cases. The intervertebral disc has been recognized as the source in just over twenty percent of cases; the remaining sixty-eight percent of cases appear to be the consequence of an assortment of discogenic as well as spondylosis causes.[2] Cervical radiculopathy has been determined to occur in between 63.5 and 107.3 out of every 100,000 individuals annually.[3] Cervical radiculopathy affects 83 people per 100,000 people on average each year; however, its prevalence rises to 203 people per 100,000 people in the fifth decade of life.[4] Cervical radiculopathy is primarily caused by herniated discs. Intervertebral discs are the cushions that sit between the vertebrae; they can burst or bulge. [5] Spine ankylosis, or the degenerative disease that affects the spine, is the main cause of cervical radiculopathy. The formation of bone spurs and a disc height reduction occur as the chipping off and wear on the brain occur in the advanced years.[6] A person experiencing physical trauma such as sports injuries or accidents could develop cervical radiculopathy as one of the consequences. Injury may not only put pressure on the nerve but also generate inflammation that will shut it down. [7] Certain genetic traits are involved in a person's risk of having cervical radiculopathy. At birth, certain people may have traits of a higher degeneration rate or disease, so the spine would be more subject to annulus fibrosus damage.[8]

Root trapping of the cervical nerve is one part of the pathoanatomic causes of cervical spine radiculopathy. In addition to the bony osteophytes, herniated disc material can cause damage of the cervical nerves. According to epidemiologic studies, the most afflicted nerves in the spine are the C7 (C6-7 rupture), C6 (C5-6 protrusion), and C8 (C7-T1 effusion) nerves in the spine.[9] Physiotherapy which is regarded as an effective treatment of cervical radiculopathy of the spine – the compressed disease which is caused by the crowding of nerves in the vertebrae – is commonly applied. Such a plan of action tackles the problem at its roots by using a box of tricks in the form of soft tissue release techniques and spinal manipulation. Their efforts to do so include an array of systems, for instance, muscle relaxants to reduce discomfort, therapy as well as motion to increase cervical flexibility, and decompression of the nerves.[10] Together with manual therapy, targeted exercises are essential in the treatment of cervical radiculopathy. Physical therapists employ a variety of exercise programs, including strengthening and isometric training. These exercises are designed to strengthen the cervical spine in addition to the neck muscles, which helps to decrease overall symptoms and improve functional capacity.[11]

A musculoskeletal condition known as myofascial pain syndrome (MPS) is characterized by motor, sensory, and autonomic symptoms that are brought on by activated muscle trigger points. In the general population, the prevalence of neck myofascial pain varies from 5.9% to 38.7%.[12] Compared to men, women have a higher frequency of cervical myofascial syndrome.[13] The most common cause of impairment among middle-aged working people is overuse or repetitive stress syndrome, or MPS.[14] The fourth most prevalent illness that

results in disability is neck myofascial pain.[15] Higher levels of subjective pain perception, disability, and sleep issues are associated with MPS.[16] Myofascial Points (MTrPs) are excellent mimics of other illnesses including visceral or radicular pain and may also cause transferred pain.[17] Myofascial pain syndrome (MPS) is a kind of regional muscular pain disease that is characterized by the presence of one or more hypersensitive areas and acute, deep pain that originates from one or more muscles and the fascia. Palpably tight muscular bands containing very painful trigger points, which may induce local or transferred pain, are indicative of myofascial pain syndrome patients.[18] Despite clinical observations suggesting a relationship between myofascial trigger points (MTrPs) and increased pain and disability in CR patients, the exact nature and strength of this association remain unclear. Understanding the frequency of MTrPs and their association with pain and disability levels is critical for developing effective treatment strategies and improving patient outcomes. This study aims to fill this knowledge gap by examining the prevalence of MTrPs among CR patients, comparing these findings with reported pain and disability levels, and offering recommendations for targeted interventions.

MATERIAL AND METHODS

A cross-sectional study was conducted in Irfan General Hospital and Prime Teaching Hospital Peshawar. Sample size was calculated using the Open Epi Online Sample Size calculator. With a population size of 240 patients. A total sample size of 148 was determined, incorporating a margin of error of 5% and a confidence level of 95%. Accordingly, 148 participants who met the eligibility criteria were recruited for data collection. A non-probability convenience sampling technique was used allowing for the selection of participants based on their availability and willingness to participate in the study. Patients were eligible if they met the following criteria: aged 18 to 65 years, male or female; diagnosed with cervical radiculopathy; positive results on Upper Limb Tension Tests (ULTTs); positive Spurling test results; limited neck rotation; MRI-confirmed CR with nerve root compression or related abnormalities; neck and arm pain corresponding to the affected cervical nerve root; and willingness to participate. Patients were excluded based on a history of previous shoulder or neck surgery, whiplash injury, spondylolisthesis, signs of myelopathy (e.g., abnormal gait, upper motor neuron signs), history of spine fractures, diagnosed active cancer or infections, and fibromyalgia. Ethical approval for the study was obtained from the KMU ethics committee (reference number DIR/KMU-AS&RB/FN/001773) on July 19, 2022. Data were collected from the physical therapy departments of the two hospitals, with informed consent obtained from all participants. Participants were screened for eligibility criteria, and both subjective histories and medical records were evaluated. Clinical features and demographic data were documented, with diagnostic procedures including MRI assessments, dermatomal evaluations, and the Spurling test to identify cervical radiculopathy. A four-point rating system was used to assess myofascial pain syndrome and its relationship to pain severity and impairment. The Neck Disability Index (NDI) assessed impairment, while the Numerical Pain Rating Scale (NPRS) measured pain intensity. Data analysis was performed using version 23 of SPSS (Statistical Program for Social Science), with a significance level set at $P = 0.05$. Descriptive analysis was employed for sociodemographic data. The qualitative data were expressed in frequency and percentages and the quantitative data expressed as mean and standard deviations. The relationship between two or more categorical variables was analyzed by Chi-square Test. The Shapiro-Wilk test was utilized to assess data normality. Since the data were not normally distributed, the Pearsons correlation test was used to determine the relationships between MTrPs, pain severity, and disability. The study duration spanned six months, commencing after obtaining approvals from Khyber Medical University (KMU), the

IPMR graduate committee, and the Advanced Studies & Research Board (ASRB).

RESULTS

During the six-month data collection period, 148 participants were included, that are diagnosed with cervical radiculopathy, revealing key demographic characteristics and clinical findings. The average age of participants was 39.27 years, with a standard deviation of 13.59 years, ranging from 18 to 65 years. The sample comprised 60.8% males and 39.2% females. Notably, all participants tested positive for the Spurling test and Upper Limb Tension Tests, indicating a uniform diagnosis of cervical radiculopathy across the sample.

Table 1: Demographic Data of Participants

Variables	N	Minimum	Maximum	Mean ±S. D
Age	148	18.00	65.00	39.27 ±13.59
Height (cm)	148	150.00	185.00	169.46 ± 8.59
Weight (kg)	148	50.00	97.00	71.973 ± 11.77
Gender	Frequency		Percentage	
Male	90		60.8%	
Female	58		39.2%	
Total	148		100.0%	
Spurling Test				
Positive	148		100%	
Negative	0		0%	
ULTT				
Positive	148		100%	
Negative	0		0%	

In terms of the level of cervical radiculopathy, the data indicated that the C6 cervical level was most frequently affected, accounting for 45.9% of cases. This was followed by C7 at 41.2% and lower percentages for C3, C4, C5, and C8.

Table 2: Level of Cervical Radiculopathy

Level of Cervical Radiculopathy	Frequency	Percentage
C3	4	2.7%
C4	6	4.1%
C5	5	3.4%
C6	68	45.9%
C7	61	41.2%
C8	4	2.7%

The Neck Disability Index (NDI) scores demonstrated a moderate level of disability among participants, with a mean score of 22.74, indicating significant impact on daily activities. The Numeric Pain Rating Scale (NPRS) results supported this finding, as participants reported a mean pain score of 5.80, highlighting the moderate pain levels experienced by this population.

Table 3: Descriptive Statistics of NDI Scores

Variables	N	Minimum	Maximum	Mean ±S. D
NDI	148	0	50	22.74 ± 6.34

The assessment of Myofascial trigger points (MTrPs) showed a high prevalence of pain in specific muscles, particularly the upper trapezius and levator scapulae. For instance, 93.92% of participants exhibited taut bands and pain on palpation in the upper trapezius. Overall, the average number of MTrPs identified was 15.15, indicating considerable Myofascial involvement in these patients.

Table 4: Frequency of MTrPs Across Different Muscles

Muscle	Taut Band	Tenderness	Pain on Palpation	Pain on Full Stretching
Upper Trapezius	139 (93.92%)	140 (94.59%)	139 (93.92%)	140 (94.59%)
Splenius Capitis	135 (91.22%)	139 (93.92%)	135 (91.22%)	145 (97.97%)
Levator Scapulae	135 (91.22%)	137 (92.57%)	142 (95.95%)	145 (97.97%)
Rhomboid Maj/Min	140 (94.59%)	139 (93.92%)	135 (91.22%)	142 (95.95%)
Scalenes	138 (93.24%)	138 (93.24%)	137 (92.57%)	139 (93.92%)

Statistical analyses confirmed that the data did not follow a normal distribution, as indicated by significant p-values from the Shapiro-Wilk test for NDI, NPRS, and MTrPs. Additionally, strong positive correlations were found between Neck disability index, Numeric pain rating scale, and Myofascial Trigger Points scores, suggesting that higher levels of disability and pain intensity were associated with an increased number of Myofascial Trigger Points scores. Specifically, the Spearman correlation coefficients were 0.868 for the Neck Disability Index and 0.822 for the Numeric Pain Rating Scale, both statistically significant at the 0.01 level.

These findings underscore A strong positive correlation between Neck Disability, Pain, and Myofascial Trigger Points in cervical radiculopathy patients has been shown in Table 6. highlighting the importance of comprehensive assessment and management strategies for this population.

Table 5: Correlation between NDI, NPRS, and MTrPs

Correlations					
			NDI	NPRS	MTrPs
Spearman's rho	Myofascial Trigger Points (MTrPs)	Correlation Coefficient	.868**	.822**	1.000
		Sig. (2-tailed)	.000	.000	.

**. Correlation is significant at the 0.01 level (2-tailed).

DISCUSSION

This study aimed to determine how frequent Myofascial Trigger Points of the neck occur and to prove an association between the pain level and disability, and these MTrPs occurrence. This goal implementation concerns data from 148 participants which is considered for the demographic information, Neck disability index along with Numeric pain rating scale and Myofascial Trigger Points scale. The goals were met using statistics with such factors to find out whether there is a link between Myofascial Trigger Points and the clinical symptoms of cervical radiculopathy to some extent. 148 participants with a mean age of 39.27 ±13.59 years, ranging from 18-65 years, were recruited for this study. Male participants were in the majority 60.8%, and females were 39.2% with a mean height and weight of 169.46 ± 8.59 cm and 71.973 ± 11.77 kg, respectively. This estimates this demographical distribution of the cervical radiculopathy patient population. This study revealed a high frequency of MTrPs, with 93.92% of participants showing MTrPs in the upper trapezius, 91.22% in the splenius capitis, and 91.22% in the levator scapulae. The mean MTrP score among participants was 15.15 ± 3.28, indicating a significant burden of trigger points. Correlation analysis showed a strong positive relationship between MTrP scores and the Neck Disability Index (NDI) ($r = 0.868$, $p < 0.001$) and the Numeric Pain Rating Scale (NPRS) ($r = 0.822$, $p < 0.001$). These findings suggest that higher MTrP scores are associated with increased pain and disability, highlighting the role of MTrPs in exacerbating CR symptoms.

Cerezo-Téllez et al. (2016)[16] and shave et al. (2019)[19] identified high frequencies of MTrPs in the trapezius (78.5%) and levator scapulae (72.1%) muscles among patients with chronic neck pain and CR. In these results align with these studies, confirming the upper trapezius (93.92%) and levator scapulae (91.22%) as

significant sites for MTrPs. Cerezo-Téllez's study emphasized the trapezius in non-specific neck pain, whereas Sari's research focused on MTrP prevalence in CR patients. The consistency of our findings with these studies underscores the importance of these muscles in MTrP pathology. However, our study extends this understanding by detailing the specific frequency rates and correlating them with pain and disability levels. Ezzati et al. (2021)[20] observed a high prevalence of trigger points in the infraspinatus and scalene muscles, with a significant correlation between pain severity and disability. Although our study corroborates the high frequency of MTrPs, particularly in the upper trapezius and levator scapulae, it provides a more detailed correlation between MTrP scores and pain/disability, suggesting that specific muscle involvement may better reflect overall symptom severity in CR. Ezzati et al. (2021)[21] reported a correlation between pain severity and disability but did not find a strong link between the number of trigger points and pain intensity. In contrast, our study found a robust correlation between MTrP scores and both NDI ($r = 0.868$) and NPRS ($r = 0.822$), indicating that the severity of MTrPs is more strongly associated with pain and functional impairment than merely their count. This suggests that MTrP characteristics, rather than just their number, play a crucial role in pain and disability outcomes.

Sambyal et al. (2016)[22] demonstrated that Myofascial Release (MFR) improved NDI and NPRS scores in CR patients. Our results, showing a significant correlation between MTrP severity and pain/disability, support the efficacy of MFR in managing CR symptoms. This correlation underscores the importance of addressing MTrP severity in treatment strategies, reinforcing the need for targeted interventions. Shave et al. (2019)[19] found that active trigger points were more prevalent in CR patients, a finding that aligns with our observation of high MTrP scores. Our study adds depth by correlating MTrP severity with pain and disability, enhancing the understanding of MTrP impact and providing a more comprehensive view of their role in CR. Our study found frequency rates for the upper trapezius, splenius capitis, and levator scapulae showing that these muscles are most critically involved in CR. This matches with existing literature that identifies all these muscles as significant sources of MTrPs in neck pain. Our detailed analysis of MTrP characteristics offers new insights into their relationship with CR. By focusing on specific muscle groups and their MTrP features, we provide a granular understanding of how MTrPs contribute to pain and disability. This contributes to the growing body of evidence supporting the importance of MTrP management in CR and highlights the need for further research on targeted treatment approaches. In conclusion, our findings not only confirm previous research on the frequency of MTrPs in cervical radiculopathy but also enhance the understanding of their impact on pain and disability. By detailing the strong correlations between MTrP severity and patient-reported outcomes, this study contributes valuable insights into the role of MTrPs in CR, advocating for a nuanced approach to diagnosis and treatment.

RECOMMENDATIONS

To expand this current knowledge, future research should attempt to employ a more extensive and diverse sample of participants from various geographic areas and hospital affiliations to strengthen the methodological level of the research. Fully controlled randomized trials are suggested to determine the outcomes and develop pain and disability causation assessment related to MTrPs temporally. Moreover, the addition of tools that are based on objective evidence, to use terms by electromyography (EMG), argometer or ultrasound imaging would give a better insight on MTrPs and their effects.

CONCLUSION

In conclusion, this study confirms the high frequency of myofascial trigger points Myofascial Trigger Points in individuals with cervical radiculopathy (CR) and establishes a strong correlation between these trigger points and the levels of pain and disability

experienced by patients. The results highlight that Myofascial Trigger Points, particularly in specific muscles such as the upper trapezius and levator scapulae, frequently contribute to the severity of symptoms in cervical radiculopathy patients. This underscores the importance of addressing Myofascial Trigger Points, in clinical management strategies for cervical radiculopathy, as targeting these trigger points could potentially alleviate pain and improve functional outcomes, thereby enhancing overall patient care and quality of life

REFERENCES

1. Srinivasulu M, Chunduri D. Comparing Mulligan Mobilization and Neural Mobilization Effects in Patients with Cervical Radiculopathy. RGUHS Journal of Physiotherapy. 2021;1(2).
2. Rajalaxmi V, Lavanya R, Kirupa K, Mary SD, Yuvarany M. Efficacy of neural mobilization and cervical stabilization in cervicobrachial pain: A randomized controlled trial. Prof (Dr) RK Sharma. 2020;20(4):41433.
3. Borrella-Andrés S, Marqués-García I, Lucha-López MO, Fanlo-Mazas P, Hernández-Secorún M, Pérez-Bellmunt A, et al. Manual therapy as a management of cervical radiculopathy: a systematic review. BioMed Research International. 2021; 2021:1-15.
4. Dhuriya A, Katiyar N, Sethi ADK. Effect of combined neural mobilization and intermittent traction in patients with cervical radiculopathy. Journal of Physical Medicine Rehabilitation Studies & Reports SRC/JPMRS/137:2021
5. Watkins RG. Cervical disc herniations, radiculopathy, and myelopathy. Clinics in sports medicine. 2021;40(3):513-39.
6. Chen J, Chen R, Li Y, Chen M, Lv Z, Zeng H, et al. Systematic Review and Meta-Analysis of the Evaluation of the Efficacy of Manipulation and Cervical Traction in the Treatment of Radical Cervical Spondylosis. Emergency Medicine International. 2022;2022.
7. Petersen JA, Brauer C, Thygesen LC, Flachs EM, Lund CB, Thomsen JF. Prospective, population-based study of occupational movements and postures of the neck as risk factors for cervical disc herniation. BMJ open. 2022;12(2):053999.
8. Joseph R, Roy F. Prevalence of Cervical Radiculopathy among Information Technology Professionals with Neck Pain. Indian Journal of Pain. 2023;37(3):169-72.
9. Plener J, Csiernik B, To D, da Silva-Oolup S, Hofkirchner C, Cox J, et al. Conservative management of cervical radiculopathy: a systematic review. The Clinical Journal of Pain. 2023;39(3):138-46.
10. Sharma MR, Saharan AK, Dubey S, Pilaniya M, Taneja D, Ranjeeta W. Effectiveness of Conventional Physiotherapy in the Management of Neck Pain.
11. Abd El-Azeim A, Grase M. Efficacy of Mulligan on electromyography activation of cervical muscles in mechanical neck pain: randomised experimental trial. Physiotherapy Quarterly. 2023;31(4):7-14.
12. Kashif M, Tahir S, Ashfaq F, Farooq S, Saeed W. Association of myofascial trigger points in neck and shoulder region with depression, anxiety and stress among university students. J Pak Med Assoc. 2021;71(9):2139-42.
13. Sarı H, Akarırmak Ü, Uludağ M. Active myofascial trigger points might be more frequent in patients with cervical radiculopathy. European journal of physical and rehabilitation medicine. 2012;48 2:237-44.
14. Sambyal R, Moitra M, Samuel AJ, Kumar SP. Does myofascial release technique contribute to cervical radiculopathy treatment? Cues from a noncontrolled experimental design study. Revista Pesquisa em Fisioterapia. 2016;6.
15. Samatra D, Widyadharma IP, Haditya Y, Suryamulyawan K, Devi G, Lim D, et al. Characteristics of cervical myofascial pain in medical students. Bali Journal of Anesthesiology. 2019;3.
16. Cerezo-Téllez E, Torres-Lacomba M, Mayoral-Del Moral O, Sánchez-Sánchez B, Dommerholt J, Gutiérrez-Ortega C. Prevalence of Myofascial Pain Syndrome in Chronic Non-Specific Neck Pain: A

Population-Based Cross-Sectional Descriptive Study. Pain medicine (Malden, Mass). 2016;17(12):2369-77.
17. Öztürk G, Geler Külcü D, Aktaş İ, Aydoğ E. Coexistence of miyofascial trigger points and cervical disc herniation: which one is the main source of pain? 2016.
18. Cardoso LR, Rizzo CC, De Oliveira CZ, Dos Santos CR, Carvalho AL. Myofascial pain syndrome after head and neck cancer treatment: prevalence, risk factors, and influence on quality of life. Head & neck. 2015;37(12):1733-7.
19. Sari H, Akarirmak U, Uludag M. Active myofascial trigger points might be more frequent in patients with cervical radiculopathy. European journal of physical and rehabilitation medicine. 2012;48(2):237-44.
20. Ezzati K, Ravarian B, Saberi A, Salari A, Reyhanian Z, Khakpour M. Prevalence of cervical myofascial pain syndrome and its correlation with the severity of pain and disability in patients with chronic non-specific neck pain. Archives of Bone and Joint Surgery. 2021;9(2):230.
21. Ezzati K, Ravarian B, Saberi A, Salari A, Reyhanian Z, Khakpour M, et al. Prevalence of Cervical Myofascial Pain Syndrome and its Correlation with the Severity of Pain and Disability in Patients with Chronic Non-specific Neck Pain. The archives of bone and joint surgery. 2021;9(2):230-4.
22. Sambyal R, Moitra M, Samuel AJ, Kumar SP. Does myofascial Release technique contribute to cervical radiculopathy treatment? Cues from a noncontrolled experimental design study. Revista Pesquisa em Fisioterapia. 2016;6(2)