



EFFECTIVENESS OF CONVENTIONAL THERAPY ON GOLDSMITH WORKERS WITH NECK PAIN- AN EXPERIMENTAL STUDY

Physiotherapy

Pranami Harde* Intern, Nootan College of Physiotherapy, Sankalchand Patel University, Visnagar-384315, Gujarat, India. *Corresponding Author

Vidhya Solanki Tutor, Nootan College of Physiotherapy, Sankalchand Patel University, Visnagar-384315, Gujarat, India.

ABSTRACT

Goldsmith workers are used to work for long time with cross legged posture, they may lead to develop different kinds of musculoskeletal disorder among them. **AIM:-** The study aimed to find the effectiveness of conventional therapy on Goldsmith workers with neck pain. **Objective:** To provide benefits and improve the working pattern, ergonomics, strength, posture and overall condition of Goldsmith workers. **Study Design:-** An Experimental Study **Methods:-** In 4 weeks of intervention; 30 participants with features of neck pain were studied. They will be collected by convenience sampling. They were received conventional exercises program. The outcome was measured using the Numerical Pain rating scale (NPRS) & the Neck Disability index (NDI). Pre and post data were collected and analyzed using SPSS 22.0. Paired t - test was used to find out the significance of the treatment. **Result:-** A significant improvement in pain & disability ($p < 0.05$) after the treatment was found. Greater statistically significant improvement was seen in all the participants. **Conclusion:-** The study conclude that conventional exercises program was more effective in treating neck pain on Goldsmith Workers.

KEYWORDS

Conventional Therapy, Goldsmith Workers, Neck Pain, Musculoskeletal Disorder, Numerical Pain Rating Scale (NPRS) & the Neck Disability Index (NDI)

INTRODUCTION

Work-related musculoskeletal disorders (WRMSD) ^[1] injuries or disorders of musculoskeletal tissues associated with workplace risk factors and are known by a variety of terms, including cumulative trauma disorders, repetitive strain injuries ^[2] and overuse injuries ^[3]. A group of people are engaged for making different type of ornaments with gold, known as goldsmith worker. Work related disabilities represent a major health problem ^[4] are working for a long time with their leg crossed at the ankles and the knee bent outward in less at some workshops ^[5]. It was found that goldsmiths were highly affected by improper body posture and workload. Twisting, bend over, and over-reaching are the resultant of poorly designed workstation. Moreover, lack of proper radiance at work site also exerts an additional adverse effect on the health of the goldsmiths.

Classification of functioning, disability and health from the orthopedic section of the American. The prolonged duration of sitting and concentrating causes severe neck pain and later affects the deep flexor muscles of the neck such as Longus Capitis and Longus Colli produces tightness due to repeated movements in neck pain ^{[10],[11],[12]}. One study indicated that 90% of workers spend more than 4 hours/ day behind making jewelry ^[14]. Neck pain is more common goldsmith workers than any other occupation, while the annual prevalence ranges from 42-63%. A study reported that 72% of goldsmith had pain in their neck, ankles and the knees bent outward sitting position ^[15]. The muscles in the back resisting the gravity by pulling the head forward. But these pains in workers unconsciously develop forward head posture causes thoracic kyphosis on neck. These produces further damage in the structure of the neck. ^{[16],[17]}

METHODOLOGY

The participants of neck pain will be identified from Nootan College of Physiotherapy, Orthopedic physiotherapy OPD, Visnagar. Then the individuals, who full fill the selection criteria, will be informed about the study and request to sign written consent forms. The patients will be selected by convenient sampling method. The individuals, who fulfill the selection criteria, will be informed about the study and requested to sign written consent forms. The participation that will fill the consent forms will undergo- Pre evaluation. Pre participation evaluation form consists of NPRS, NDI.

Pain will be assessed by Numeric Pain Rating Scale; Functional disability will be scored by NDI. Then it will be treated by conventional exercise program along with transcutaneous electrical nerve stimulation (TENS). Along with this the participants were given ergonomic and home advice. The treatment protocol consisted of 5 sessions of conventional treatment program/ week, and 5 sessions of TENS treatment for 4 weeks. Each subject will be evaluated prior to the first session and after the last session concerning the following aspects:

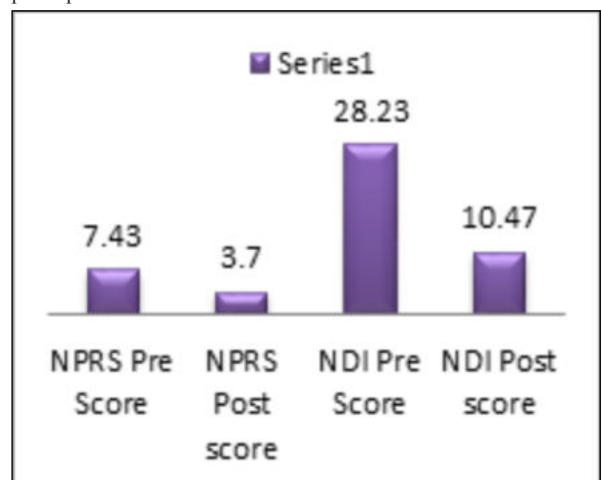
1. Pain
2. NPRS
3. Workstation assessment
4. Analysis of working posture

Conventional Therapy							
WEEK-1		WEEK-2		WEEK-3		WEEK-4	
1. Isometric c. neck extension (5-8 Reps)	neck	1. Isometric c. neck extension (5-8 Reps)	neck	1. Isometric neck extension (5-8 Reps)	neck	1. Isometric neck extension (5-8 Reps)	neck
2. Isometric c. neck extension (5-8 Reps)	neck	2. Isometric c. neck extension (5-8 Reps)	neck	2. Isometric c. neck extension (5-8 Reps)	neck	2. Isometric c. neck extension (5-8 Reps)	neck
3. Isometric lateral flexion (5-8 Reps)	neck	3. Isometric lateral flexion (5-8 Reps)	neck	3. Isometric neck lateral flexion (5-8 Reps)	neck	3. Isometric neck lateral flexion (5-8 Reps)	neck
4. TENS Mode-Continuous Time-15min Frequency- above 50 Hz		4. Chin tuck (5-7 Reps = 10 sec hold)		4. Chin tuck (5-7 Reps = 10 sec hold)		4. Chin tuck (5-7 Reps = 10 sec hold)	
		5. TENS Mode-Continuous Time-15min Frequency- above 50 Hz		5. Head lift with Chin tuck (5 Reps = 10 sec hold)		5. Head lift with Chin tuck (5 Reps = 10 sec hold)	
				6. TENS Mode-Continuous Time-15min Frequency- above 50 Hz		6. Thoracic extension (5 Reps = 10 sec hold)	
						7. TENS Mode-Continuous Time-15min Frequency- above 50 Hz	

Interpretation

Pre- and post-treatment data of the participants in the group were noted. All statistical analysis was done using SPSS 22.0 software for windows. Descriptive analysis was obtained by using mean & standard deviation. The intragroup comparison between group of pre-treatment and post treatment of NDI and NPRS was done by paired t-test.

The result found in this study disclosed that after 4 weeks treatment programme, the group received conventional therapy and ergonomic advice attained significant improvement in reducing neck pain among participants.



Outcomes	Pre treatment	Post treatment	t-value	p-value
NPRS	7.43±0.817	3.70±1.264	23.549	0.00
NDI	28.23±4.174	10.47±3.071	29.891	0.00

DISCUSSION

The results found in this study disclosed after four weeks treatment program, the participants received conventional exercise program attained a significant improvement in the pain relief and reduce improve function. This study was conducted on thirty participants with a mean age of 32.67± 4.611(mean ± SD). The participants were received Conventional Exercise program for 1 session/day and 5 days/week for 4 weeks. The participants were also advised about the ergonomics. In this study Neck Disability Index (NDI), Numerical Pain Rating Scale (NPRS) were used as outcome measures. The results showed a significant improvement in the outcome measures in the post-treatment stage as compared to the pre-treatment stage. Though a significant improvement was found after treatment in the group, all the participants showed greater improvement in the NDI Score, NPRS Score. ($P < 0.05$).

The results of this study revealed that the goldsmiths are engaged in prolonged forward bending posture in there working condition. The amount and class of forward bent posture and the techniques of work influence the binding force on the vertebral discs and the electromyography of erector spine muscles^[22].

A multitude of physical therapy interventions have been proposed to be effective in the management of neck pain, including isometric exercises, deep neck flexor and scapulothoracic muscle strengthening exercises and modalities.

The main purpose of the treatment is to reduce neck pain improve posture.

These findings are consistent with those reported by Verhagen et al. showed that physiotherapy interventions such as exercise, mobilization and electrotherapy modalities reduce work-related neck pain levels and improve function. This is achieved by re-educating, strengthening and stretching muscles; mobilizing soft tissue and improving ergonomics and kinetic handling in the workplace. The conventional exercises are helps to lengthen the contract muscles and strengthen the weak muscles. It also helps to reduce pain.

The present study demonstrated that TENS treatment is effective in pain relief. TENS is a popular modality for treating musculoskeletal pain. TENS excited large diameter afferent fibers According to the gate control theory^[23]. The results of this study were statistically significant, and especially show that TENS diminishes the pain experienced in the cervical area due to musculoskeletal disorders.

Thus, the alternative hypothesis [H1], are failed to reject. The above-exposed statement suggests that the conventional exercises are the effective management of participants with neck pain in goldsmith workers to reducing pain and disorder.

CONCLUSION

The study concluded that with the use of conventional therapy shows a statistically significant improvement for reducing neck pain, increasing muscle strength and improve posture among goldsmith workers.

REFERENCES

1. Bureau of Labor Statistics. Lost-worktime injuries and illnesses: Characteristics and resulting days away from work, 2003. United States Department of Labor News, USDL; 2005. Mar 30, 05–521.
2. Bernaards, C., Ariëns, G., & Hildebrandt, V. (2006). The (cost-)effectiveness of a lifestyle physical activity intervention in addition to a work style intervention on the recovery from neck and upper limb symptoms in computer workers. *BMC Musculoskeletal Disorders*, 7(1). doi: 10.1186/1471-2474-7-80
3. Barbe, M., & Barr, A. (2006). Inflammation and the pathophysiology of work-related musculoskeletal disorders. *Brain, Behavior, And Immunity*, 20(5), 423-429. doi: 10.1016/j.bbi.2006.03.001
4. Christopher H, Edwin R. Chilvers J, Hunter, Nicoolas A B. Davidson's principles and practice of Medicine, 18th ed, Harcourt Bracc and Company Ltd.; 24-28 Oval Road, London, NW 17 DX, UK:1999. P- 322-54, 370-74.
5. Gangopadhyay, S., Ray, A., Das, A., Das, T., Ghoshal, G., Banerjee, P., & Bagchi, S. (2003). A Study on Upper Extremity Cumulative Trauma Disorder in Different Unorganised Sectors of West Bengal, India. *Journal Of Occupational Health*, 45(6), 351-357. doi: 10.1539/joh.45.351
6. Kim, Y. (2009). Effects of the Use of the Hold Relax Technique to Treat Female VDT Workers with Work-related Neck-shoulder Complaints. *Korean Journal Of Occupational And Environmental Medicine*, 21(1), 18. doi: 10.35371/kjoem.2009.21.1.18
7. Shikdar, A., & Al-Kindi, M. (2007). Office Ergonomics: Deficiencies in Computer Workstation Design. *International Journal Of Occupational Safety And Ergonomics*, 13(2), 215-223. doi: 10.1080/10803548.2007.11076722

8. Garra, G., Singer, A., Leno, R., Taira, B., Gupta, N., Mathaikutty, B., & Thode, H. (2010). Heat or Cold Packs for Neck and Back Strain: A Randomized Controlled Trial of Efficacy. *Academic Emergency Medicine*, 17(5), 484-489. doi: 10.1111/j.1553-2712.2010.00735.x
9. Jull, G. (2000). Deep Cervical Flexor Muscle Dysfunction in Whiplash. *Journal Of Musculoskeletal Pain*, 8(1-2), 143-154. doi: 10.1300/j094v08n01_12
10. Hush, J., Michaleff, Z., Maher, C., & Refshauge, K. (2009). Individual, physical and psychological risk factors for neck pain in Australian office workers: a 1-year longitudinal study. *European Spine Journal*, 18(10), 1532-1540. doi: 10.1007/s00586-009-1011-z
11. Hush JM, Michaleff Z, Maher CG, Refshauge K. Individual, physical and psychological risk factors for neck pain in Australian office workers: a 1-year longitudinal study. *European spine journal*. 2009 Oct 1;18(10):1532-40
12. Cook, C., Richardson, J., Braga, L., Menezes, A., Soler, X., & Kume, P. et al. (2006). Cross-Cultural Adaptation and Validation of the Brazilian Portuguese Version of the Neck Disability Index and Neck Pain and Disability Scale. *Spine*, 31(14), 1621-1627. doi: 10.1097/01.brs.0000221989.53069.16
13. Robinson, A. (1996). Transcutaneous Electrical Nerve Stimulation for the Control of Pain in Musculoskeletal Disorders. *Journal Of Orthopaedic & Sports Physical Therapy*, 24(4), 208-226. doi: 10.2519/jospt.1996.24.4.208.