



## EFFECTIVENESS OF ISOMETRIC NECK EXERCISE WITH ERGONOMIC INTERVENTION ON NECK PAIN AND FUNCTIONAL DISABILITY AMONG COMPUTER PROFESSIONALS

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### ABSTRACT

**Background:** Neck pain is a common health problem in the general population and especially among computer workers. Most people experience some degree of neck pain in their lifetime. It results in dramatic functional impairments and mobility issues. Most of the cases with neck pain is associated with disability.<sup>[1]</sup>  
**Objectives:** The study focused on assessment of neck pain and functional disability among computer professionals, evaluation of the effectiveness of isometric neck exercise with ergonomic intervention on neck pain among computer professionals, determine the effectiveness of isometric neck exercise with ergonomic intervention on functional disability among computer professionals. **Materials and methods:** A quantitative research approach was used for the study. The study was experimental in nature and non probability purposive sampling technique was used. The research design selected for this study was one group pre test post test design. The researcher selected thirty computer professionals, who met the inclusion criteria from two selected IT companies in Kottayam district. The tools used were demographic data sheet, questionnaire to assess work related factors, Wong-Backer faces pain scale for assessing neck pain and Modified Vernon neck pain disability index for assessing functional disability. **Results:** The result of the study revealed that the isometric neck exercise with ergonomic intervention had a statistically significant effect on neck pain and functional disability. **Conclusion:** Based on the findings of the study it can be concluded that there is evident reduction in neck pain and improvement in functional ability among computer professionals after isometric neck exercise with ergonomic intervention.

### KEYWORDS :

#### INTRODUCTION

Technological advances, particularly invention of computers have revolutionized our way of working. Computer has become an integral part of our life. India has been in the forefront in cyber world with IT industry developing into a major service provider. This has also ushered in a new genre of occupational health problem that is of computer-related health problems.<sup>[1]</sup> Neck pain is a common health problem in the general population and especially among computer workers. Most people experience some degree of neck pain in their lifetime.<sup>[2]</sup> In computer professionals non-specific neck pain is more common because of having poor posture while working with computer, sitting at a computer for prolonged periods of time, placing computer monitor too high or too low.<sup>[3]</sup>

#### MATERIALS AND METHODS

Quantitative approach was used for the study. Study design selected was one group pretest posttest design. Non probability purposive sampling technique was employed to select 30 computer professionals with neck pain from two IT companies. The following tools were used to collect the data on the present study.

- Tool 1.1 – Demographic data sheet
- Tool 1.2 – Questionnaire to assess work related factors
- Tool 2 – Wong – backer faces pain scale
- Tool 3 – Modified Vernon neck pain disability index

The data was collected over a period of 6 weeks. The subjects were selected from Ambilobe Technologies and Services Private Limited, Athirampuzha and Ennexa Technologies Private Limited, Kottayam. Employees with neck pain were identified by oral confirmation. Sixteen computer professionals from Ambilobe Technologies and Services Private Limited and 14 computer professional from Ennexa Technologies Private Limited who fulfilled the inclusion criteria were selected. Pretest was done using Wong backer faces scale for neck pain and functional disability was assessed using Modified Vernon neck disability index. Computer professionals took 20 minutes to complete the tool. After pretest, isometric neck exercise was demonstrated by the investigator on first day and instructed

them to make necessary ergonomic change in work place. Then the samples continued doing exercise for 14 consecutive days for 2 times a day. The level of neck pain and functional disability was assessed on 14<sup>th</sup> day by using the same scale. Again sample were instructed to do the same exercise for another 14 consecutive days. After that, posttest 2 was done on 28<sup>th</sup> day of the intervention programme.

#### RESULTS

A socio personal and clinical data sheet was prepared to collect information on different aspects. A few of the findings include the following. Among the participants selected for the study 60% of computer professionals belonged to the age group of 21 – 25 years and 8% of computer professionals belonged to 26 – 30 years of age. Among study samples, 53.3% were females and 46.7% were males. Regarding duration of neck pain, 40% of samples were having neck pain for 4 – 6 months and 30% of them were having neck pain for 1-3 months duration. Among subjects, 43.3% of the samples were experiencing tingling and pricking type of pain. Majority of the computer professionals (76.7%) were working for 8 – 10 hours per day with the computer. Among the subjects, 53.3% of samples were adapting bending slightly forward position while working with computer and 30% were adapting backward bending posture while working with computer. Among computer professionals 66.7% were getting rest hours during work while 33.3% were not getting rest hours during work. Majority of computer professionals (96.7%) had not taken any self care measures for neck pain.

**Table 1 Frequency distribution and percentage of computer professionals based on neck pain (n = 30)**

Neck pain	f	%
No pain (0)	0	00.0
Mild pain(1 – 3)	13	43.3
Moderate pain(4 – 6)	16	53.3
Severe pain (7 – 10)	1	3.4

Table 1 shows that 53.3% of computer professionals had moderate pain, 43.3% had mild pain and only 3.4% had severe pain.

**Table 2 Frequency distribution and percentage of computer professionals based on functional disability (n = 30)**

Functional disability	f	%
No functional disability (0 – 25%)	0	00.0
Mild functional disability (26 – 50%)	22	73.3
Moderate functional disability (51 – 75%)	8	26.7
Above severe functional disability (> 75%)	0	00.0

Table 2 depicts that majority of computer professionals (73.3%) had mild functional disability and the rest had moderate functional disability.

**Effectiveness of isometric neck exercise with ergonomic intervention on neck pain among computer professionals**

**Table 3 Mean rank and Chi square value of neck pain among computer professionals on pretest, posttest 1 and posttest 2 (n = 30)**

Neck pain	Mean rank	Df	$\chi^2$
Pretest	2.78	2	41.03***
Posttest 1	1.85		
Posttest 2	1.37		

\*\*\*Significant at 0.001 level

Table 3 depicts that Chi square ( $\chi^2$ ) value of Friedman's test of neck pain among computer professionals in pretest, posttest 1, posttest 2 was 41.03. It was statistically significant ( $p < 0.001$ ) and this shows that isometric exercise with ergonomic intervention was effective in reducing neck pain among computer professionals and the effect was sustained at repeated intervals.

**Effectiveness of isometric neck exercise with ergonomic intervention on functional disability among computer professionals**

**Table 4 Mean rank and Chi square value of functional disability among computer professionals in pretest, posttest 1, and posttest 2 (n = 30)**

Functional disability	Mean rank	Df	$\chi^2$
Pretest	2.78	2	41.04***
Posttest 1	1.88		
Posttest 2	1.33		

\*\*\*Significant at 0.001 level

Table 4 depicts that Chi square value of Friedman's test of functional disability among computer professionals in pretest, posttest 1 and posttest 2 was 41.04. It was statistically significant ( $p < 0.001$ ) and this shows that isometric exercise with ergonomic intervention was effective in reducing functional disability among computer professionals and the effect was sustained at repeated intervals.

**DISCUSSION**

The present study focused on the effectiveness of isometric neck exercise with ergonomic intervention on neck pain and functional disability among computer professionals in selected IT companies, Kottayam district. The main objective of the study was to assess the neck pain among computer professionals. The findings of the present study showed that 53.3% of computer professionals had moderate level of neck pain. This result was supported by a report conducted in four metropolitan cities in India about work related musculoskeletal health disorders among IT professionals showed that 30% of computer professionals had experienced neck pain.<sup>[4]</sup> Regarding the functional disability, majority (73.3%) of computer professionals had mild functional disability and 26.7% had moderate functional disability. The present study findings were consistent with the findings of a survey that was conducted in Ahmadabad to assess the prevalence of neck pain in computer operators in 2015. The study revealed that in

India 47% of computer professionals experienced neck pain and functional disability.<sup>[5]</sup>

Another objective of the study was to assess the effectiveness of isometric neck exercise with ergonomic intervention on neck pain among computer professionals. It was found that the neck pain among computer professionals reduced after isometric neck exercise with ergonomic intervention, since there was a significant difference in median scores of neck pain among computer professionals. This finding was similar to the results of a study conducted in Bangalore to assess the efficacy of isometric neck exercise and stretching with ergonomics over ergonomics alone in computer professionals, which reported that stretching with isometric exercise proved more beneficial in reducing neck pain among computer professionals.<sup>[6]</sup>

Another major findings of the study was that isometric neck exercise with ergonomic intervention was effective in reducing the functional disability among computer professionals. There was a significant difference in the median scores of functional disability among computer professionals. A study conducted in Delhi to find out the effect of different positional isometric neck exercise training on neck pain and functional disability in patients with neck pain supported the present study findings that functional disability considerably reduces with isometric neck exercise.<sup>[7]</sup>

**CONCLUSION**

The findings revealed that 53.3% of computer professionals had moderate neck pain and 43.3% had mild neck pain. Regarding the functional disability 73.3% of computer professionals had mild level of functional disability and 26.7% had moderate level of functional disability. These findings indicated the need for an intervention to reduce the neck pain and functional disability among computer professionals with neck pain.

The present study further revealed that isometric neck exercise with ergonomic intervention was effective in reducing the neck pain and functional disability among computer professionals. Findings of the present study suggested that isometric neck exercise with ergonomic intervention could be used as an effective intervention programme to reduce the neck pain and functional disability among computer professionals.

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