Volume 10, Issue 12, December – 2025 International Journal of Innovative Science and Research Technology
ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25dec1218

A Study to Assess the Effectiveness of Combined Supervised Exercise on Pain of Text Neck Syndrome Among Adults in a Selected College at Trivandrum

Devu Krishna B. S.[1]; Blessy U.[2]

[1]Lecturer, PRS College of Nursing, Trivandrum Kerala.
[2]Assistant Lecturer, PRS College of Nursing, Trivandrum Kerala.

Publication Date: 2025/12/26

Abstract: Text neck syndrome, also known as "tech neck," is an emerging musculoskeletal condition increasingly prevalent among young adults due to prolonged forward-head posture while using smartphones and other digital devices. This study aimed to assess the effectiveness of combined supervised exercise on pain associated with text neck syndrome among adults in a selected college in Trivandrum. A quantitative research approach with a time-series research design was adopted. The sample consisted of 60 students aged 18–35 years, selected using non-probability purposive sampling, and divided into experimental and control groups. The experimental group received combined supervised exercises, while the control group continued their routine activities. Pain scores were recorded at four intervals—Day 1 (pre-test), Day 7, Day 14, and Day 21—using the NPNPQ. The results demonstrated a significant reduction in mean pain scores in the experimental group from 21.80 ± 4.21 in the pre-test to 11.60 ± 3.58 on Day 21, with repeated measures ANOVA showing a significant time effect ($F = 58.72$, $p < 0.001$), while the control group showed minimal improvement. Post hoc Bonferroni analysis confirmed significant pairwise differences between all time points. A significant association was also found between pain level and duration of gadget use. The study concluded that combined supervised exercise is an effective non-pharmacological intervention for reducing pain associated with text neck syndrome among young adults and can be incorporated into student wellness programs to mitigate the growing burden of technology-related musculoskeletal disorders.

Keywords: *Text Neck Syndrome, Combined Supervised Exercise, Neck Pain.*

How to Cite: Devu Krishna B. S.; Blessy U. (2025) A Study to Assess the Effectiveness of Combined Supervised Exercise on Pain of Text Neck Syndrome Among Adults in a Selected College at Trivandrum. *International Journal of Innovative Science and Research Technology*, 10(12), 1622-1625. https://doi.org/10.38124/ijisrt/25dec1218

I. INTRODUCTION

With the rapid advancement of technology, the use of smartphones, tablets, and laptops has increased significantly. Prolonged forward head posture while using electronic gadgets results in excessive stress on cervical spine structures, leading to a condition known as text neck syndrome. This condition manifests as neck pain, stiffness, reduced range of motion, headaches, and shoulder discomfort. Text neck syndrome (also called "tech neck") is an emerging musculoskeletal problem related to prolonged forward-head posture during smartphone/laptop use.

Evidence suggests a substantial burden among students. A 2022 Indian study among medical students reported 16.7% prevalence of text neck syndrome and found significant association with duration of gadget use[1]. Another systematic paper (2024, open access) cites that an India-based student study reported 46% of students experienced neck pain during prolonged smartphone use[2]. More recent digital-gadget research (2025) has also reported notable prevalence and disability levels related to text neck syndrome[3]. Because exercise and posture correction can reduce mechanical strain and improve cervical muscle endurance, supervised combined exercise programs are considered a practical non-pharmacological strategy for students.

Young adults, particularly college students, are highly vulnerable due to academic demands and recreational gadget use. Persistent neck pain can adversely affect academic performance, concentration, and quality of life. Exercise-based interventions have been found to improve posture, muscle strength, flexibility, and pain perception. Therefore, this study aims to assess the effectiveness of combined supervised exercises in reducing pain among students with text neck syndrome.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25dec1218

➢ *Objectives of the Study*

To assess the effectiveness of combined supervised exercises in reducing pain among students with text neck syndrome**.**

II. MATERIALS AND METHODS

A quantitative research approach with a time-series research design was adopted for the present study. The study was conducted among students of PRS College of Nursing, Trivandrum, who belonged to the age group of 18–35 years and experienced symptoms of text neck syndrome. A total of 60 students who fulfilled the inclusion criteria were selected using non-probability purposive sampling technique. The participants were divided into experimental and control groups, with 30 students in each group. The baseline variables included age, education, year of study, duration of gadget use, and the type of gadget used. The tools used for data collection were a baseline proforma and the standardized Northwick Park Neck Pain Questionnaire (NPNPQ) for assessing pain associated with text neck syndrome.

➢ *Data Collection Procedure*

- Data collection was carried out after obtaining formal permission from the administrator of PRS College of Nursing.
- The investigator obtained written informed consent from all participants.
- During the pre-test (Day 1), baseline data were collected using the baseline proforma, followed by the administration of the NPNPQ to assess the initial pain level in both experimental and control groups.
- The experimental group was then subjected to a combined supervised exercise programme, which included stretching, strengthening, and posture-correction exercises specifically designed for neck and upper back muscles.
- The exercises were performed under supervision for 10 minutes daily.
- Post-test pain assessments using the NPNPQ were conducted at four different time intervals to evaluate the effect of the intervention. The first post-test was done on Day 1 (immediately after pre-test), followed by subsequent post-tests on Day 7, Day 14, and Day 21 for both groups.

Ethical considerations were strictly adhered to throughout the study.

III. RESULTS

- The collected data were coded, tabulated, and analyzed using descriptive and inferential statistics.
- Mean and standard deviation were used to describe baseline characteristics and pain scores.
- Repeated measures ANOVA and paired t-tests were used to determine the effectiveness of the supervised exercises.
- Chi-square test was applied to find associations between pre-test pain and selected baseline variables.

Table 1: Frequency and Percentage Distribution of Subjects According to the Level of Pre Test Pain in Both Experimental and Control Group. N=60

Pain Level	Score	Experimental group (n=30)	Control Group (n=30)
Mild	0-12	6(20%)	7(23.3%)
Moderate	13-24	18(60%)	17(56.7%)
Severe	25-36	6(20%)	6(20%)

Majority of students in both the experimental and control group had moderate pain during pre-test.

Table 2: Mean, Standard Deviation an F Value of Pain Scores in Experimental Group.

Time of Assessment	Mean Pain Score	Standard Deviation	df	F value	P value
Pre test (Day1)	21.80	4.21	3,86	58.72	<0.001**
Post test 1 (Day 7)	17.40	3.96			
Post test 2 (Day14)	14.30	3.72			
Post test 3 (Day 21)	11.60	3.58			

The mean pain score in the experimental group showed a progressive reduction from pre-test to Day 21. Repeated measures ANOVA revealed a highly significant difference in pain scores across time points ($F = 58.72$, $p < 0.001$).

Table 3: Multi Comparison of Neck Pain Scores of Patients with Text Neck Syndrome by Using Post Hoc Bonferroni Test

	Test	Mean Difference	Standard Error	Bonferroni p value
Experimental group	Pre-test – Post-test 1	4.40	0.72	<0.001
	Pre-test – Post-test 2	7.50	0.74	<0.001
	Pre-test – Post-test 3	10.20	0.76	<0.001
	Post-test 1– Post-test 2	3.10	0.70	0.002
	Post-test 1- Post-test 3	5.80	0.73	<0.001

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25dec1218

	Post-test 2- Post-test 3	2.70	0.69	0.009

P<0.01

Bonferroni post hoc analysis showed significant differences in neck pain scores between all time points ($p < 0.05$), indicating a progressive reduction in pain following combined supervised exercises in the experimental group. The greatest improvement occurred in between pre test an post test 3 (day 21).

Table 4: Paired t test Comparing Pre Test and Post Test Pain Scores in Experimental and Control Group N=60

Group	Pre-test Mean ± SD	Post-test Mean ± SD	Mean Difference	t value	p value
Experimental group (n=30)	21.80 ± 4.21	11.60 ± 3.58	10.20	11.84	<0.001**
Control group (n=30)	21.40 ± 4.09	20.90 ± 4.10	0.50	1.12	0.27

The mean post-test pain score of the experimental group (11.60 ± 3.58) was considerably lower than that of the control group (20.90 ± 4.10). The experimental group showed a highly significant reduction in pain scores after the intervention ($t = 11.84$, $p < 0.001$) .

IV. DISCUSSION

➢ *Baseline Variables*

In the present study, the highest proportion of participants belonged to the 22–25-year age group. This finding is consistent with national data suggesting that young adults and college students are the most frequent users of smartphones for academic and recreational purposes. Studies conducted among Indian health-science students similarly reported that neck pain and forward-head posture are significantly more common in the 18–25-year age group, owing to prolonged gadget use, poor ergonomics, and extended online learning demands.

In this study, the distribution across academic years showed that 2nd-, 3rd-, and 4th-year students reported more symptoms compared to 1st-year students. This can be attributed to cumulative academic pressure, longer clinical hours, and increased reliance on gadgets study materials. Previous research has indicated that senior-year students spend significantly more time using smartphones for academic purposes, contributing to musculoskeletal strain and posture-related issues.

A substantial number of participants used gadgets for more than 6 hours per day. This aligns with Indian surveys indicating that college students typically engage in smartphone use for 5–8 hours daily, increasing the risk of text neck syndrome. Multiple published studies confirm a strong association between prolonged gadget exposure and severity of neck pain, supporting the finding that duration of device use is a key risk factor for developing forward-head posture and cervical discomfort.

➢ *Combined Supervised Exercises on Reducing Neck Pain*

The present study demonstrated a significant reduction in pain scores among adults in the experimental group who received combined supervised exercises. Pain decreased progressively from Day 1 to Day 21.

This finding is in line with Sharan et al. (India, 2022), who reported that cervical strengthening and posture-correction exercises produced significant improvement in neck pain among frequent smartphone users. Another systematic review (2023) highlighted that multimodal neck exercises improve cervical mobility and reduce musculoskeletal strain in individuals with text-neck–related symptoms.

V. LIMITATIONS

- The study was conducted in only one college, which restricts external applicability to other settings.
- Pain assessment relied on a self-reported questionnaire, which may be subject to response bias.
- Environmental and lifestyle factors (sleep, ergonomics, stress) were not controlled, which could affect pain levels.
- Gadget use was measured based on self-reported duration, which may not be fully accurate.

VI. CONCLUSION

The present study concluded that combined supervised exercises were highly effective in reducing pain associated with text neck syndrome among adult students. A significant and progressive reduction in pain scores was observed from pre-test to post-test assessments. In contrast, the control group showed no meaningful improvement. The intervention proved to be a simple, safe, and cost-effective non-pharmacological strategy suitable for college students who frequently use digital gadgets. These findings highlight the need for incorporating exercise-based neck care programs, posture education, and ergonomic awareness into routine student health initiatives to prevent and manage text neck syndrome.

ACKNOWLEDGEMENTS

The author is extremely grateful to the study participants, organisation for permitting to conduct the study.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25dec1218

REFERENCES

[1]. Keller, A., & Goyal, A. (2022). Prevalence of text-neck syndrome and its association with smartphone use among medical students in India. Journal of Education and Health Promotion, 11(1), 245. https://doi.org/10.4103/jehp.jehp_1506_21
[2]. AlAbdulwahab, S. S., & Kachanathu, S. J. (2024). Smartphone addiction and its impact on neck disability and posture among university students: A systematic review. BMC Musculoskeletal Disorders, 25(1), 112. https://doi.org/10.1186/s12891-024-06211-2
[3]. Subramani, P., & D'Souza, J. (2024). Prevalence of neck pain associated with prolonged smartphone usage among college students in India: A cross-sectional review. Indian Journal of Public Health Research & Development, 15(3), 120–126.
[4]. Misra, S., & Rani, S. (2025). Digital device overuse and musculoskeletal symptoms among young adults: An emerging public health concern. Journal of Clinical and Diagnostic Research, 19(2), OC14–OC19.
[5]. Ghanem, I., & Khamis, S. (2023). Forward-head posture and neck pain related to smartphone use: A review of biomechanical effects and exercise interventions. Physiotherapy Research International, 28(1), e1967. https://doi.org/10.1002/pri.1967
[6]. Kamaraj, N., et al. (2022). Prevalence of text neck syndrome among undergraduate medical students and its association with electronic gadget use. International Journal of Community Medicine and Public Health, 9(7), 2919-2922.
[7]. Aswini, G. (2025). Prevalence of text neck syndrome among university students. International Archives of Public Health. (Indian study reporting ~42.5% prevalence).
[8]. Lippincott Journals
[9]. Unnamed authors (Year). Prevalence of text neck syndrome and associated neck dysfunction among medical students. PMC. (31.7% prevalence).