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Effect of Posture Management and Strengthening of Deep Neck Flexors in Cervical Pain with Forward Head Posture Due to Increased Screen Time in Young Adults

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Abstract

Background: Prolonged screen exposure often leads to cervical pain and forward head posture (FHP) in young adults. The management of this condition requires an understanding of ergonomic corrections and strengthening techniques for cervical stabilizers.

Aims: To evaluate and compare the effectiveness of posture monitoring and longus colli/longus capitis strengthening on cervical pain and forward head posture.

Setting: The study was conducted at ESIC Hospital Co operated staff and OPD Indore (MP)

Design: Pre- and post-test experimental design

Methodology: 30 participants aged 18–35 with cervical pain and FHP were randomly divided into Group A (experimental group receiving strengthening of deep neck flexors) and Group B (control group receiving ergonomic and functional activity guidance) tools included the Visual Analog Scale (VAS) and Neck Disability Index (NDI). Data were by analyzed using an independent t-test.

Results: Both groups demonstrated statistically significant improvements ($p < 0.001$). Group A had a pre-post mean VAS difference of 3.07 points, while Group B showed 4.20 points. However, the post-intervention comparison between groups was statistically non-significant ($p = 0.5793$).

Conclusion: Postural management and targeted muscle strengthening are both effective in reducing cervical pain and improving head posture. Though Group B showed slightly better results, both approaches remain clinically valuable.

Keywords: Cervical Pain, Forward head Posture, Ergonomics, Deep neck Flexors, Prolong screen Time, Young Adults,

INTRODUCTION

Modern-day screen dependency is a growing public health issue. with increasing digital engagement, poor ergonomic practices are prevalent among young adults resulting in biomechanical strain to the cervical spine Forward head posture (FHP) is one such postural deviation which contributes to cervical dysfunction and discomfort.

Research has shown that long-term static sitting and screen exposure negatively affect cervical spine health, especially in individuals who lack awareness of proper ergonomics or physical conditioning the postural management, which includes ergonomic education, workspace modification, and habit correction,

is essential for restoring musculoskeletal balance In parallel, the targeted strengthening of deep neck flexors is considered a key therapeutic approach to enhance neck stability and correct FHP
The Clinical studies have indicated that activating and retraining These deep stabilizing muscles may reduce pain, improve posture, and prevent recurrence, a comprehensive approach combining ergonomic correction with muscular strengthening could offer long-term relief and functional restoration in young adults suffering from screen-induced cervical dysfunction. This study aims to evaluate and compare the effectiveness of ergonomic counseling and deep neck flexor strengthening in addressing cervical pain and forward head posture among screen-dependent young adults

Need of study
With increasing screen time in young adults, forward head posture and associated cervical pain have become highly prevalent. While multiple management strategies exist, comparative evaluation of ergonomic intervention and targeted deep cervical flexor strengthening is limited This research study addresses that gap
Review of Literature Various studies have discussed the relationship between sedentary screen use and cervical dysfunction
Kay et al. (2012) emphasized the therapeutic benefit of posture correction and muscle retraining
Ghamkhar et al. (2019) and Alghadir et al. (2021) suggested improved postural alignment with deep cervical flexor strengthening
Ergonomic interventions, as per Lynch et al. (2010), aid in functional independence.

Subjects and Methods
Participants: A total of 30 subjects aged 18–35 years with cervical pain and forward head posture were enrolled and randomly divided into two equal groups:
- Group A (n=15): Received deep neck flexor strengthening
- Group B (n=15): Received posture monitoring and ergonomic training

Inclusion Criteria:
- Age between 18–35 years
- Cervical pain associated with forward head posture
- Symptoms linked to screen exposure

Exclusion Criteria:
- History of cervical spine disorders (spondylitis, radiculopathy)
- Neurological conditions
- Structural spinal deformities (scoliosis, kyphosis)
- not associated with the prolong screen timing

Study Design and Setting: The study was a pre- and post-test experimental design conducted at the ESICS Hospital in indore(MP)

Instrumentation and Tools:
- Visual Analog Scale (VAS)
- Neck Disability Index (NDI)

- .Exercise mats, head weights, ergonomic chairs, goniometer for cervical ROM
- Eligible participants were asked to fill out the consent form to provide a consent for taking a part of these study voluntarily

Treatment Protocol:

- **Group A:** Strengthening exercises for deep neck flexors (e.g., cranio-cervical flexion, low-load training)
- **Group B:** Ergonomic counseling, workspace modifications, and posture correction guidance

Statistical Analysis: Data were analyzed using an independent t-test. Results were expressed as mean ± SD. p-value < 0.05 was considered statistically significant.

Results Demographics: Group A: Age = 23.66±5.71, M/F = 8/7

Group B: Age = 25.86±5.60, M/F = 7/8

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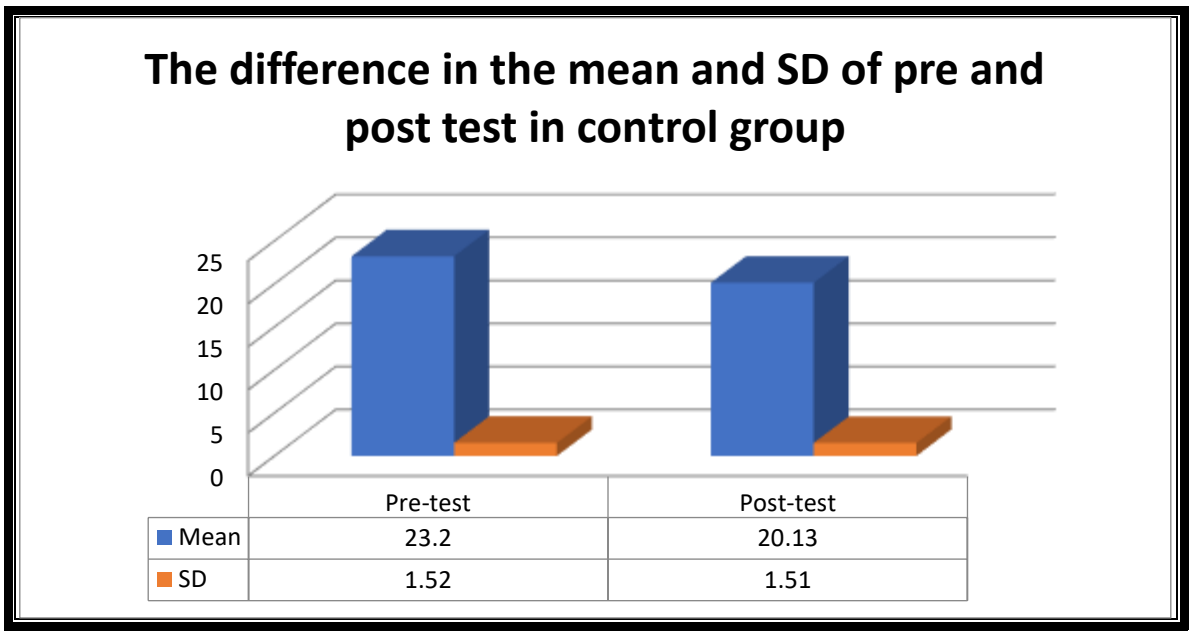
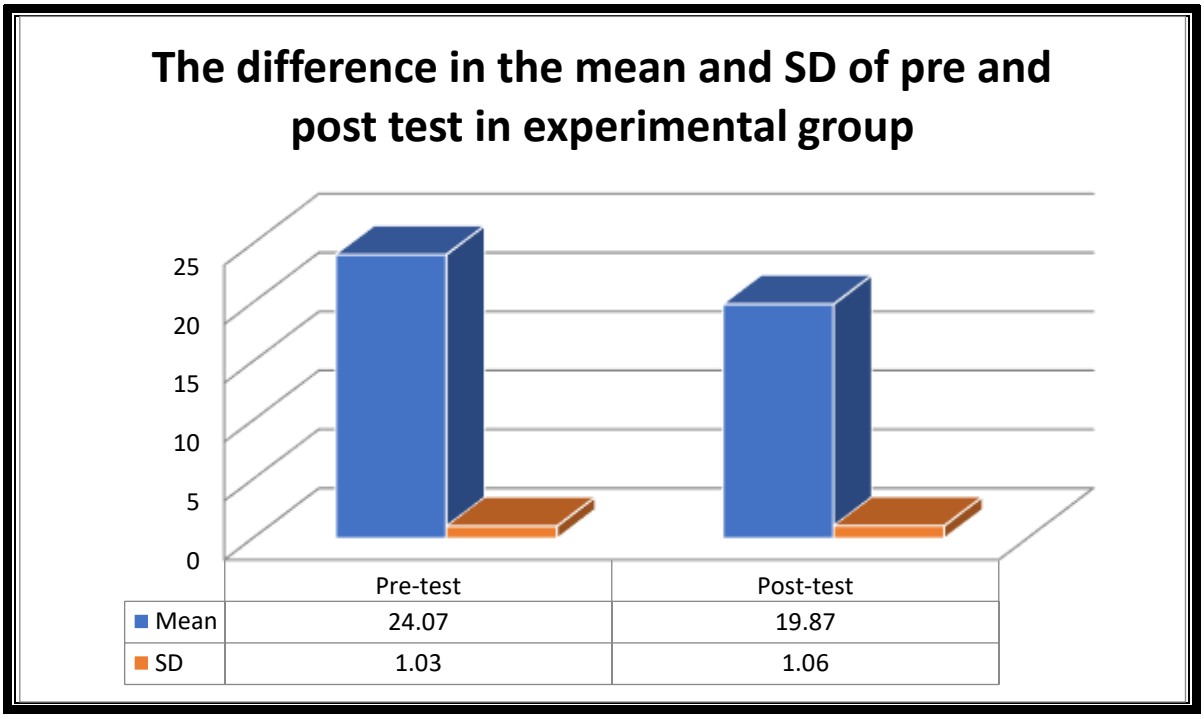
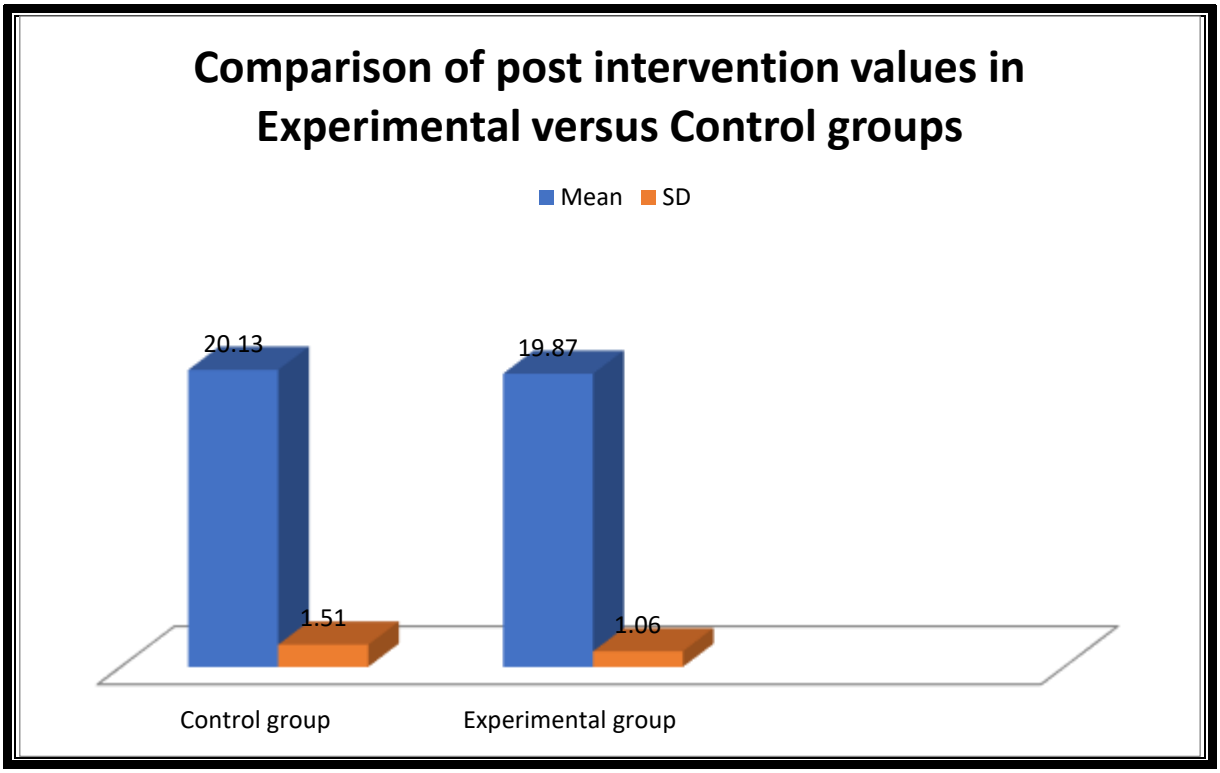


Graph 03: Graph showing The difference in the mean and SD of pre and post test in control group



Graph 04: Graph showing The difference in the mean and SD of pre and post test in experimental group



Graph 05: Graph showing Comparison of post intervention the mean and SD values in Experimental versus Control groups

VAS Comparison:

- Group A (Pre = 23.20±1.52, Post = 20.13±1.51, t = 5.54, p < 0.001)
- Group B (Pre = 24.07±1.03, Post = 19.87±1.06, t = 10.99, p < 0.001)
- Post-treatment comparison (p = 0.5793)

Discussion

Our study suggests that both posture-focused ergonomics and targeted strengthening exercises are effective in managing cervical pain in young adults with FHP

The results align with earlier studies emphasizing posture awareness (Silva et al., 2009) and muscle retraining (Ruivo et al., 2014).

While Group B showed marginally better results, the difference was not significant. Therefore, both interventions may be chosen based on feasibility, access to equipment, and patient compliance.

Conclusion

Ergonomic education and strengthening of deep cervical flexors are both valid and effective strategies to manage cervical pain due to FHP in screen-dependent individuals. A combined approach may yield optimal clinical results.

Limitations and Future Recommendations

- Small sample size
- Short follow-up duration
- Further research on larger populations with long-term follow-up is advised

Clinical Implications This study provides a practical guideline for physiotherapists in addressing screen-induced postural dysfunctions through simples

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