DOI: 10.7860/JCDR/2025/80478.21770

Exploring the Relationship between Smoking and Musculoskeletal Parameters of the Neck and Shoulder: A Cross-sectional Study

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ABSTRACT

Introduction: Tobacco use is a major preventable cause of death, with India having 253 million adult users. It increases the risk of diseases like atherosclerosis, respiratory disorders, and skeletal issues, including poor posture. In India, 28.6% of adults use tobacco, with higher rates in men (42.4%) than women (14.2%).

Aim: This study aimed to explore the relationship between smoking and musculoskeletal parameters of the neck and shoulder, specifically focussing on posture and muscle impairment in smokers.

Materials and Methods: A cross-sectional design was used, with a sample size of 128 participants aged 20-40 years, including current smokers with a minimum smoking history of 3 years and non-smokers. Smokers were selected using snowball sampling, while non-smokers were chosen via simple random sampling. Exclusion criteria included individuals with neurological disorders, musculoskeletal conditions, psychological impairments, recent surgery, spinal or upper limb pathology, or those undergoing treatment for neck pain. Participants who used phones for more than 4 hours or worked on computers for over 6 hours were also excluded. The study's outcome measures included forward head posture, cervical muscle strength, shoulder protrusion, and range of motion.

Results: Key findings indicated a statistically significant association between smoking and an increased prevalence of neck and shoulder musculoskeletal symptoms, such as pain, stiffness, and reduced range of motion. Smokers were found to experience more severe musculoskeletal issues compared to non-smokers. In smoker group, cervical flexor strength, cervical extensor strength and lateral rotator left strength showed statistically significant difference with p values 0.04, 0.39 and 0.39, respectively whereas, in non-smoker group, cervical flexor strength and lateral rotator right strength showed significant difference with p values 0.08 and 0.43, respectively.

Conclusion: The study emphasises the demand for further exploration to establish a causal relationship between smoking and musculoskeletal issues in the neck and shoulder, suggesting that smoking cessation may be an effective intervention to improve musculoskeletal health.

Keywords: Craniovertebral angle, Posture, Range of motion, Shoulder protrusion