

Sedentary Lifestyle, Postural Imbalance, and Psychological Distress in Young Adults: A Narrative Review

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Abstract: In today's technology-driven world, sedentary habits have become increasingly common, especially among young adults, affecting both physical and mental health. This narrative review explores how a sedentary lifestyle, postural deviations, and psychological distress are interconnected, with particular emphasis on stress and anxiety. Evidence from observational and experimental research suggests that prolonged sitting and poor posture can contribute to musculoskeletal discomfort, disturbances in autonomic regulation, and inefficient breathing patterns, all of which may negatively influence mental well-being.

Postural issues such as forward head position and excessive thoracic curvature have been linked to increased sympathetic nervous system activity and reduced psychological resilience. Furthermore, decreased physical activity associated with sedentary behavior may limit the release of mood-enhancing chemicals like endorphins, making individuals more vulnerable to stress. While existing studies indicate moderate to strong relationships among these factors, most are cross-sectional and rely heavily on self-reported data, limiting conclusions about causation.

This review underscores the importance of adopting a holistic approach that integrates ergonomic corrections, physical activity, and psychological support to improve overall health outcomes in young adults.

Keywords: Sedentary lifestyle, posture, stress, anxiety, young adults

INTRODUCTION

The rapid integration of digital technology into everyday life has significantly transformed the routines of young adults. Increased reliance on smartphones, laptops, and online platforms for education and work has led to prolonged sitting and reduced physical activity. These lifestyle changes have contributed to the growing prevalence of sedentary behavior, now recognized as a major public health concern.

Beyond its well-known association with metabolic and cardiovascular risks, sedentary behavior also affects musculoskeletal and psychological health. Postural imbalance has emerged as a

critical link between physical inactivity and mental well-being. Common postural deviations—including forward head posture, rounded shoulders, and increased thoracic curvature—are frequently observed in individuals with prolonged screen exposure.

While the physical consequences of poor posture are well established, its influence on psychological health is gaining increasing attention. Current evidence indicates that posture may affect emotional states through interconnected physiological and neurological pathways. This review aims to bring together existing research on the relationship between sedentary behavior, postural imbalance, and psychological distress, particularly stress and anxiety, in young adults.

MECHANISMS LINKING POSTURE AND PSYCHOLOGICAL HEALTH

1. Biomechanical Factors: Poor posture disrupts normal body alignment, placing excessive strain on muscles and connective tissues. Continuous tension, particularly in the neck and upper back, can lead to discomfort, fatigue, and pain. Persistent physical discomfort may, in turn, contribute to irritability, reduced focus, and increased psychological stress.

2. Respiratory Dysfunction: Slouched or collapsed postures can restrict chest expansion and limit diaphragmatic movement. This often results in shallow breathing and reduced oxygen intake. Inefficient breathing patterns are closely linked to feelings of anxiety, fatigue, and decreased cognitive performance.

3. Autonomic Nervous System Imbalance: Posture influences the balance of the autonomic nervous system. Slumped positions are often associated with increased sympathetic (stress-related) activity and reduced parasympathetic (relaxation-related) function, leading to heightened stress responses. In contrast, an upright posture may support relaxation and emotional stability.

4. Reduced Physical Activity: A sedentary lifestyle limits opportunities for physical movement, which is essential for maintaining mental health. Regular physical activity stimulates the release of endorphins and neurotransmitters such as serotonin and dopamine, which help regulate mood. Reduced activity levels are therefore strongly associated with increased stress and anxiety.

EVIDENCE FROM LITERATURE

A substantial body of research highlights the relationship between sedentary behavior, posture, and psychological distress. Cross-sectional studies consistently demonstrate moderate associations between poor posture and elevated levels of stress and anxiety. Tools such as the Rapid Upper Limb Assessment (RULA) and the Depression Anxiety Stress Scale (DASS-21) have shown that individuals with higher postural risk scores often report greater psychological distress.

Experimental studies further support these findings. Maintaining an upright posture has been linked to improved mood, reduced fatigue, and better cognitive performance, while slouched postures are often associated with negative emotional states and reduced self-confidence.

However, variations in study design, participant characteristics, and assessment methods contribute to inconsistencies in the findings. Many studies focus on specific populations, such as students or office workers, which may limit broader applicability.

CRITICAL ANALYSIS

Despite growing evidence of a relationship between posture and psychological health, several limitations should be considered. Most studies are cross-sectional, making it difficult to determine cause-and-effect relationships. It remains unclear whether poor posture leads to psychological distress or if individuals experiencing stress are more likely to adopt poor posture.

Additionally, many studies rely on self-reported measures, which may introduce bias. Objective measures such as cortisol levels or heart rate variability are less frequently used. There is also a lack of uniformity in posture assessment methods, with observational tools like RULA offering limited precision compared to advanced biomechanical analyses.

Confounding factors such as academic stress, sleep quality, and lifestyle habits are often not fully accounted for. Nevertheless, the consistency of findings across studies suggests a meaningful association that deserves further exploration.

DISCUSSION

The relationship between sedentary behavior, posture, and psychological distress is multifactorial. Physiological mechanisms, including impaired breathing and autonomic

imbalance, provide a strong basis for this connection. Behavioral aspects such as prolonged screen time and limited physical activity further intensify psychological strain.

Interestingly, even individuals with knowledge of proper ergonomics—such as physiotherapy students—often display poor postural habits. This indicates that awareness alone may not be sufficient to bring about behavioral change.

Environmental factors, including academic demands, inadequate workstation setups, and increased dependence on digital devices, also contribute to sedentary patterns. Addressing these challenges requires a comprehensive strategy that combines education, behavioral change, and supportive environments.

CLINICAL IMPLICATIONS

This review highlights the importance of considering posture as a component of psychological health assessment. Early identification of postural issues may help detect individuals at risk of stress and anxiety.

A multidisciplinary approach is recommended, including:

- Ergonomic improvements in study and work settings
- Postural correction exercises and physiotherapy interventions
- Promotion of regular physical activity
- Breathing exercises to improve respiratory efficiency
- Stress management and relaxation techniques

Healthcare professionals, particularly physiotherapists, play a vital role in implementing these strategies and promoting a holistic approach to health.

CONCLUSION

Sedentary behavior and postural imbalance are important factors contributing to psychological distress among young adults. Current evidence suggests a moderate to strong association between poor posture and increased stress and anxiety levels. Although a clear causal relationship has yet to be established, posture remains a modifiable risk factor that can be addressed through early intervention.

Combining ergonomic practices, physical activity, and mental health strategies is essential for improving overall well-being. Future research should focus on longitudinal and interventional studies to better understand causal pathways and develop evidence-based guidelines.

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