

DETERMINANTS AND RISK FACTORS CONTRIBUTING TO ANXIETY VULNERABILITY AMONG ADOLESCENTS

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ABSTRACT

The problem of adolescent anxiety disorders is increasing in the world, and its consequences on the future psychological and cardiovascular health are significant. This is a review of determinants and risk factors that lead to anxiety vulnerability among teenagers in the United Kingdom. There is evidence that psychosocial stressors, which include academic pressure, socioeconomic disadvantage, cyberbullying, and family instability, interact with biological processes, dysregulation in hypothalamic-pituitary-adrenal (HPA) axis and activation of the sympathetic nervous system. Lifestyle habits such as not embracing sleep hygiene, lack of exercise and unhealthy eating also contribute to the increased susceptibility to the presence of

anxiety. Gender disparities predetermine an increased prevalence rate among female adolescents, whereas the populations with low income levels are characterized by greater exposure to chronic stress. The results raise the concern of early identification strategies in schools and the primary care level. Psychological resiliency intervention, social support intervention, and environmental determinants intervention should be implemented at multiple levels to address the anxiety-related morbidity during adolescence.

Keywords: Adolescents; Anxiety Vulnerability; Risk Factors; Socioeconomic Stress; HPA Axis; Mental Health.

INTRODUCTION

Anxiety is a condition of the mind in which there is excessive worry, fear and nervousness. It stimulates the sympathetic nervous system to make the heart beat faster, to vasoconstriction, and to crank cortisol levels up, all of which raise blood pressure (DeLalio, Sved, & Stocker, 2020). When chronic anxiety is present, which leads to the 'fight or flight' response to the chronic stressors, the stressors become sustained hypertension (Oo, Lim, Goh & Koh, 2025). Furthermore, sustained stress increases the levels of cortisol, which can aggravate hypertension associated with arterial stiffness (Oo et al., 2025). An increased probability of anxiety disorders among young people. Astudillo et al. (2024) conducted a cross-sectional study of an association between anxiety and elevated blood pressure in adolescent patients. The findings are consistent with earlier research by Astudillo et al. (2022) that associated anxiety with hypertension among adolescents. The rise in the incidence of anxiety disorders among teenagers paired with such lifestyle factors as poor diet, lack of physical activity, and especially screen time translates to an isolated need for targeted interventions (Modey Amoah et al., 2020). There have been several studies on the relationship

between anxiety and hypertension among adolescents. A literature review of anxiety disorders in children and adolescents was provided by Rapee et al. (2023) and discusses potential effects on cardiovascular health. According to Astudillo et al. (2024), teenagers with a generalised anxiety disorder (GAD) reported higher systolic and diastolic blood pressure than their non-anxious peers. Research by Modey Amoah et al. (2020) also examined issues of lifestyle that could be linked to the anxiety hypertension link. They found that teenagers with anxiety were more likely to engage in bad sleep hygiene, unhealthy eating habits and less physical activity all known risk factors of high blood pressure (Li et al., 2021). The environmental and socioeconomic stressors contribute to exacerbated anxiety and hypertension in adolescents in urban areas.

RESEARCH METHODOLOGY

The analysis is based on the systematic review that was conducted in the context of the MSc International Public Health dissertation. The review utilised an efficient and clear methodology to discover and combine peer-reviewed articles exploring anxiety in adolescents and risk factors associated with the condition. Predefined keywords based on the anxiety, adolescents, psychological stress, socioeconomic determinants, lifestyle factors, and cardiovascular risk were used to search electronic databases. Inclusion criteria: the studies had to be (1) peer-reviewed empirical articles, (2) they had to be conducted on adolescent populations, (3) they had to measure feelings of anxiety or stress related outcomes quantitatively or mixed-methods, and (4) they had to be published in English. Research that was related only with adult populations was not included. Eight studies were eligible to the inclusion criteria and were incorporated in the final synthesis. The analysis of data was based on finding biological, psychological, environmental, and socioeconomic determinants of anxiety. Associations were checked by looking at the reported effect sizes, confidence intervals, and statistical significance. The research in this journal represents the results of the synthesis of the studies contained in it, analyzed in the context of the public health.

RESEARCH RESULTS

The results confirmed that anxiety is associated with elevated blood pressure in adolescents. Astudillo et al (2024) revealed that although adolescents with moderate to severe anxiety were not different from their non-anxious peers in the proportion, they had either elevated or high blood pressure, adolescents with moderate to severe anxiety had significantly higher systolic and diastolic blood pressure than their non-anxious peers ($p < 0.01$). In one single-centre cross-sectional study, the stress-induced activation of the sympathetic nervous system (SNS) was found to be particularly important for blood pressure elevation. An earlier study by Astudillo et al. (2022) also found similar results as most adolescents diagnosed with an anxiety disorder had a 32% increased prevalence of hypertension above children without an anxiety disorder (OR = 1.32, 95% CI: 1.10–1.58).

DISCUSSION

The systematic review adds to the growing body of research which demonstrates that anxiety is strongly linked to high blood pressure in adolescents. This review presents several studies that had analysed in this review identified that heightened sympathetic nervous system activity, greater cortisol levels, and prolonged stress have been chief to anxiety-induced hypertension. Consistent with prior research, these physiological mechanisms are consistent with adolescents developing blood pressure that is elevated during periods of prolonged anxiety. Neurobiological changes during puberty explain anxiety vulnerability in adolescence. There is a massive remodeling of the adolescent brain in the prefrontal cortex and limbic system. The amygdala which processes fear, matures before parts of the brain which regulate its effects, which helps to increase the emotional responsiveness and impulse control. There is a stimulation of the hypothalamic-pituitary-adrenal (HPA) axis by chronic stress, which results in the release of more cortisol.

During chronic cortisol levels, the presence of chronic anxiety symptoms and dysfunctional stress regulation has been linked. An imbalance in such system of responding to stress can predispose teens to generalized anxiety disorder, social anxiety, and panic-related disorders. Anxiety vulnerability is also brought about by genetic factors. Teens whose families have a history of anxiety or mood disorders are at greater risk because of inherited genetic biology factors and an effect of the same environment. Anxious behaviors by parents may support maladaptive coping behaviors and make the parent more vulnerable. The emotional regulation and stress responsiveness are affected by hormonal changes that occur during puberty. The increased levels of sex hormones like estrogens and testosterone could be one of the causes of mood instability and anxiety sensitivity. These biological changes are some of the explanations as to why there is a rise in anxiety levels in the early to the middle adolescence period.

The focus of anxiety vulnerability is maladaptive patterns of thought. Teenagers that tend towards catastrophic thinking, rumination or negative self-appraisal have a higher risk of chronic anxiety. Stress responses are worsened by perfectionism and fear of failure, which is usually heightened in competitive academic settings. Individuals who are susceptible often experience low self-esteem and feel a lack of control over events in their lives. Adolescents who perceive ambiguous situations as a threat have higher chances of developing chronic symptoms of anxiety. The poor emotional regulation ability increases the anxiety risk. Teenagers who cannot recognize and cope with emotions might depend on avoidance coping, which perpetuates anxiety positions. Ineffective coping mechanisms, including withdrawal, denial, or excessive reassurance-seeking only dig their own graves. One of the forms of adolescent anxiety is academic stress. The stress of high-stakes tests, competition to get admission to universities and the pressure of parents, creates long-term performance stress. The research shows a positive correlation between perceived academic pressure and the severity of anxiety symptoms.

New stressors have been brought forth by the digital environment. Too much social media exposure heightens social comparison and cyber-bullying and fear of missing out (FOMO). Teenagers can absorb unrealistic ideals of attractiveness, achievement and popularity that breaks self-worth and exposes them to anxiety. The impact of cyberbullying is especially detrimental, because online abuse may be experienced continuously and may not be easy to overcome. There are increased levels of social anxiety and depressive symptoms among victims. Weaknesses in family structure, warring of parents and unpredictable parenting methods all lead to increased anxiety risks. Overprotective parenting can constrain the possibilities of adolescents to build resilience, whereas careless or authoritarian parenting can contribute to raising the levels of emotional insecurity. Adolescents who have been exposed to adverse childhood events (ACEs) such as abuse, parental violence, or substance misused by their parents are proving to be much more anxious. The socioeconomic disadvantage is assessed by measuring the income per capita across the population in the region

Socioeconomic Disadvantage is measured as the income per person of the entire population of the area. The important structural determinant is socioeconomic status (SES). Low-income adolescents are more exposed to chronic stressors such as monetary instability, housing insecurity, violence in the neighborhood, and accessibility of recreational facilities.

Access to mental health services may also be limited by economic hardship and anxiety may be left untreated. Inequality in health is thus a significant factor that contributes to anxiety vulnerability among the populations. Anxiety symptoms are closely related to the disruption in sleep. Young people are characterized with disrupted sleep schedules because of school and media. Lack of sleep affects the emotional regulation and stress reactivity. The behaviors that are linked to reduced protection against physical activity because of sedentary behavior.

It has been demonstrated that exercise reduces cortisol levels, mood, and resilience. The adolescents who have very little exercise have increased levels of anxiety symptomatology. Large amounts of caffeine, processed food and sugar can increase the symptoms of anxiety. The mood disturbances have also been attributed to nutritional deficiencies, especially omega-3 fatty acids and some of the micronutrients. The use of the substances, along with alcohol and nicotine experimentation, can be initially adopted as maladaptive coping strategies, but in the long-run, worsen anxiety.

Based on epidemiological data, female adolescents have always been found to have higher levels of anxiety than male adolescents. This inequality may be caused by hormonal factors, socialization, and gender expectations of society. Mental health cultural stigmatizing can also prevent help seeking behaviour especially among some communities. The fear of being discriminated, or not understood may extend untreated anxiety. Adolescent anxiety vulnerability

can hardly be traced to one factor. Instead, it comes about as a result of dynamic interaction between biological predispositions, psychological characteristics and environmental stressors.

A teenager with genetic predisposition and lacking skills in emotional control that is under academic stress and socioeconomic disadvantage is at increased risk. Biopsychosocial framework gives an all-round picture on how various determinants interact to cause and maintain anxiety. It should be identified at an early age. Early intervention can be achieved through regular screening of mental health in schools and on primary care settings. Incorporation of psychosocial evaluation into the adolescent healthcare visitations is a guarantee of a holistic approach to wellbeing. Such measures should be taken in prevention; school-based stress and resilience intervention programs, parent education programmes, digital literacy and anti-bullying advertisements, youth-based community support services, and better access to mental health care. Structural determinants like poverty and educational inequality should also be addressed to minimize the vulnerability to population level anxiety.

CONCLUSION

The combination of biological, psychological, social, and environmental factors determines the anxiety vulnerability of adolescents. The factors that make one more susceptible are pubertal neurodevelopment, maladaptive cognition, academic stress, socioeconomic disadvantage, digital pressures and lifestyle behaviors. There are also gender disparities and structural inequalities that add to the risk of vulnerable groups. Since the problem of adolescent anxiety in the United Kingdom is on the increase, the urgent need is a concerted effort of the entire population. Primary prevention, multilevel interventions and ensuring equal access to mental health services play a vital role in reducing the psychological and physical health effects that may occur over the long run. The policymakers and medical practitioners can maximize the outcomes of life-course and minimize the burden of future illnesses by addressing vulnerability to anxiety in adolescence.

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