EXPLORING THE ASSOCIATION BETWEEN ANXIETY DISORDERS AND HYPERTENSION

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ABSTRACT

Anxiety disorders and high blood pressure are known to be more related health conditions during adolescence, although the nature of this relationship is not thoroughly synthesized in the adolescent literature. The article analyses the relationship between anxiety disorders and hypertension using the journal style synthesis based on a systematic review on the topic of teenagers, especially in the UK. The review conducted based on peer-reviewed research sources located in Medline, PubMed and ScienceDirect and encompassed adolescents aged 13-19 years old. Observational studies and clinical research, meta-analytic evidence indicate that teens with anxiety have an elevation in systolic and diastolic blood pressure compared to their non-anxious counterparts, an increase in the activity of the sympathetic nervous system and disruption of the hypothalamic-pituitary-adrenal axis. Psychosocial stressors, including academic stress, socioeconomic deprivation, cyberbullying, family instability, lack of sleep, sedentary habits, and unhealthy diet also seem to exacerbate anxiety risk and cardiovascular risk. The evidence also suggests that non-pharmacological treatment particularly cognitive behavioural therapy, mindfulness-based stress reduction, physical exercise and sleep can help to reduce anxiety symptoms and also enhance blood pressure outcomes. Though causality is not yet clearly established, the evidence available indicates that there is a significant relationship between persistent anxiety and risk of hypertension in adolescents. The inclusion of mental health screening in the preventative approach to adolescent cardiovascular assessment can thus enhance prevention measures and enhance health outcomes in the long-term.

Keywords: Stress, Hypertension, Adolescents, Sympathetic Nervous System, Blood Pressure, Anxiety Disorders; Cortisol; United Kingdom.

INTRODUCTION

The relationship between anxiety and hypertension has been long ignored as two distinct clinical issues but in recent literature, the relationship between the two has become more apparent. In a number of studies that are summarized in the dissertation, anxiety is linked with physiological reactions consisting of an increased heart rate, constriction of the vessels, and increased secretion of stress hormones, all of which can lead to an increase in blood pressure (Mucci et al., 2016;

DeLalio et al., 2020). This association is particularly critical since repeated stress reactions can be changed to no longer be short-term reactivity but rather long-term heart load. Better early detection and prevention can be achieved through a better understanding of this association.

The problem is especially useful when the adolescence stage, when the control of emotions, coping strategies, and health practices is evolving. The dissertation emphasized that academic stress, social comparison, lack of sleep, family instability, and socioeconomic stress can heighten the anxiety symptoms and cardiovascular risk among the youth (Newlove-Delgado et al., 2021; Rapee et al., 2023). The combination of these overlapping pressure sets up a situation whereby psychological distress can have a greater impact on physical health as compared to popular belief. Adolescence is thus a very critical time period to have an integrated intervention.

This article aims to analyse the relationship between anxiety disorders and hypertension with the help of the evidence synthesized based on the systematic review in the dissertation. The literature reviewed features articles on physiology of stress, the prevalence of anxiety, the effects of intervention on blood pressure in adolescents, and the effects of anxiety on blood pressure levels, where some results indicate that there is an apparent correlation between anxiety and high blood pressure (Astudillo et al., 2024; Bautista et al., 2019). The reasons why this relationship is important to clinical practice and to the population health are also taken into account in the article. By so doing, it puts the mental and cardiovascular health in the same discussion.

RESEARCH METHODS

The article has been founded on a systematic review that has studied the impact of anxiety on the high blood pressure in teenagers, focusing on teenagers in the United Kingdom. Basing the review on the dissertation, the evidence found in PubMed, Medline, and ScienceDirect was included, and the studies were peer-reviewed observational studies, clinical trials, and similar empirical research concentrating on adolescents aged between 13 and 19 years (Astudillo et al., 2024; Li et al., 2021). The PRISMA-inspired review process was used in the review and the Newcastle-Ottawa Scale and CASP checklists were utilized in the review to evaluate the quality of the studies. The method presented a systematic framework on which to synthesize the evidence at hand. That evidence has been restructured into a journal-like discussion of association, mechanisms and implications by the present article. The initial review synthesized the effect sizes, confidence intervals, and narrative results of physiological pathways, psychosocial determinants, and intervention effects, and mentioned the limitations of the current evidence (Bautista et al., 2019; Rapee et al., 2023). Through the re-framing of such findings, the article provides a brief explanation of the way in which anxiety can be associated with hypertension in teens. The format is to ensure that the evidence is more academic publication friendly.

RESEARCH RESULTS

Anxiety and Elevated Blood Pressure

The evidence that has been synthesised in the dissertation indicates that teenagers who experience anxiety often have a higher blood pressure rate as compared to their counterparts who do not experience anxiety. In one of the referenced studies, it was determined that the systolic and diastolic blood pressure of adolescents with moderate to severe anxiety were significantly higher whereas in another study, the prevalence of hypertension in adolescents with anxiety disorders was found to be 32% higher (Astudillo et al., 2024; Astudillo et al., 2022). The findings do not in themselves prove causality, but do show anxiety to not be a mere background condition that is not correlated. The agreement of this trend in the studies of various researchers makes the argument that it is meaningful.

A pooled standardized difference in the blood pressure between those who were anxious and those who were not anxious in adolescence was also reported in the dissertation. The synthesis proposed a small yet significant difference, reported standardized mean difference was 0.47 and moderate heterogeneity among the studies included (Astudillo et al., 2022; Bautista et al., 2019; Li et al., 2021). Although the effect is not so significant to account all the cases of adolescent hypertension, it has clinical significance as the feeling of anxiety is prevalent and can be chronic. This renders it a good prevention and monitoring target.

Physiological Mechanisms

There are a number of physiological processes which could be used to explain the role of anxiety in raising blood pressure. It has been reported that chronic anxiety is associated with greater activity of the sympathetic nervous system, and the dissertation reports that the process in the long term could lead to a rise in cardiac output, vasoconstriction, and resting blood pressure (DeLalio et al., 2020; Oo et al., 2025). The repetitive occurrence of the stress response may consequently establish a route to the heart disruption of emotional distress. This process is biologically plausible to explain the correlation in the studies reviewed.

Another pathway that seems to be important is the stress related hormonal changes. The dissertation is a summary of the evidence that indicated that an increase in cortisol levels and the biomarkers of chronic stress were positively correlated with the measures of blood pressure, such as systolic blood pressure and mean arterial pressure (Bautista et al., 2019; Oo et al., 2025). These results hint at the possibility of anxiety to influence vascular functions not only via endocrine but also via autonomic pathways. This trend can be used to understand the physical effects of anxiety as being long-term.

The physiological burden of the anxiety seems to be reinforced by the behavioural factors as well. The review also reported that anxious adolescents might be more susceptible to poor sleep,

physical inactivity, poor diet and maladaptive coping behaviour which are also associated with hypertension risk (Modey Amoah et al., 2020; Li et al., 2021). By doing so, anxiety could affect the blood pressure, both directly and indirectly. The correlation thus can be said to be multifactorial as opposed to single-cause.

RESEARCH DISCUSSION

The reviewed literature in the dissertation supports the perception that the anxiety disorders are positively related to the risk of hypertension in adolescents. These are the best explanations that include autonomic stimulation, dysregulation of the HPA axis, chronic exposure to cortisol, and unhealthy behavioural patterns all of which found their reflection in the evidence base on which the dissertation was based (DeLalio et al., 2020; Rapee et al., 2023). This implies that anxiety is an issue that can be regarded as a cardiovascular but not a psychological problem. More of an integrated perspective on adolescent health is thus required.

Significant implications of the findings to early intervention are also provided. According to the dissertation, the cognitive behavioural therapy, mindfulness-based stress reduction, and lifestyle modification were related to the increase of the anxiety symptoms and the improvement of the blood pressure results, respectively, in some instances (Li et al., 2021; Intarakamhang et al., 2020). Such methods are important as they can be seen as the combination of both emotional and physiological aspects of the issue. They also provide viable alternatives to schools, primary care facilities and community-based health care.

The broader public health implications of the association are that other factors besides individual biology cause anxiety. The literature review highlighted the importance of academic pressure, digital stress, family instability, and socioeconomic adversity in both raising the vulnerability to anxiety and the cardiovascular load in adolescents (Newlove-Delgado et al., 2021; Cruwys et al., 2021). This implies that neither individual counselling nor medication can be applied in prevention. There is also a need to get broader structural and psychosocial supports.

Limitations

The evidence base applied in the dissertation has a number of limitations which should be taken into consideration. A significant number of the studies included used self-reported anxiety measure and the dissertation has mentioned that this can bring in subjectivity and bias in responses to the results (Rapee et al., 2023). These are useful measures to be used in screening, though they might not be able to adequately reflect clinical severity or biological stress load. This restricts the accuracy of the relationship which is reported between studies. The majority of the studies reviewed were cross-sectional as well as not longitudinal. This complicates the issue of identifying the association between anxiety and hypertension, the association between hypertension-related symptoms and anxiety, or the role of other underlying factors (as it was seen in the dissertation) in

the relationship (Astudillo et al., 2024; Davidson et al., 2018). Reported association is significant although the causality is not clear. Better longitudinal data are yet to be had. The other weakness is that there is variance in study techniques and populations. The dissertation presented the moderate heterogeneity of the studies as well as indicated that the outcomes might be affected by the sample size, measuring devices, and demographic variations (Astudillo et al., 2022; Li et al., 2021). Moreover, not every study mentioned was also restricted by the UK adolescent population, although the dissertation was put into its context. This implies that the findings are applicable, although not completely population-specific.

Conclusion

The evidence synthesized based on the dissertation demonstrates that anxiety disorders are related to the high blood pressure and the high risk of hypertension in adolescents. The analyzed literature indicates that it might be a sympathetic activation, cortisol dysregulation, and anxiety-related behavioural patterns, including poor sleep, and decreased physical activity (DeLalio et al., 2020; Modey Amoah et al., 2020). Though the evidence at hand is not conclusive with regard to causality, it is too much to warrant closer clinical care. The cardiovascular risk assessment of adolescents should thus consider anxiety as an aspect of the risk assessment. The connection also gives an indication towards the worth of the integrated care. The results of the dissertation suggest that early intervention can help enhance the emotional well-being and cardiovascular outcomes by providing psychological support and stress management methods as well as healthier lifestyle habits (Li et al., 2021; Intarakamhang et al., 2020). Increment of the screening and early intervention in the school, primary care and adolescent health services would thus decrease the burden of the disease in the long run. Dealing with anxiety can potentially prevent not only mental health, but cardiovascular health in the future.

REFERENCES

Astudillo, Y., Kibrom, S., Pereira, T., Solomon, S., Krishnan, S., & Samsonov, D. (2024). Association between anxiety and elevated blood pressure in adolescent patients: A single-center cross-sectional study. *Journal of Hypertension, 42*(4), 644–649.

Astudillo, Y. M., Krishnan, S., Pereira, T. E., Solomon, S., & Samsonov, D. V. (2022). Association between anxiety and hypertension in adolescent patients: A single-center cross-sectional study. *Journal of the American Society of Nephrology, 33*(11S), 442–442. https://doi.org/10.1681/asn.20223311s1442c

Bautista, L., Bajwa, P., Shafer, M., Malecki, K., McWilliams, C., & Palloni, A. (2019). The relationship between chronic stress, hair cortisol and hypertension. *International Journal of Cardiology Hypertension, 2*, 100012. https://doi.org/10.1016/j.ijchy.2019.100012

Cruwys, T., Haslam, C., Rathbone, J., Williams, E., & Haslam, S. A. (2021). GROUPS 4 HEALTH protects against unanticipated threats to mental health: Evaluating two interventions during

COVID-19 lockdown among young people with a history of depression and loneliness. *Journal of Affective Disorders*. https://doi.org/10.31234/osf.io/tyvhg

Davidson, K. W., Alcántara, C., & Miller, G. E. (2018). Selected psychological comorbidities in coronary heart disease: Challenges and grand opportunities. *American Psychologist, 73*(8), 1019–1030. https://doi.org/10.1037/amp0000239

DeLalio, L. J., Sved, A. F., & Stocker, S. D. (2020). Sympathetic nervous system contributions to hypertension: Updates and therapeutic relevance. *Canadian Journal of Cardiology, 36*(5), 712–720. https://doi.org/10.1016/j.cjca.2020.03.003

Intarakamhang, U., Macaskill, A., & Prasittichok, P. (2020). Mindfulness interventions reduce blood pressure in patients with non-communicable diseases: A systematic review and meta-analysis. *Heliyon, 6*(4), e03834. https://doi.org/10.1016/j.heliyon.2020.e03834

Li, Y., Buys, N., Li, Z., Li, L., Song, Q., & Sun, J. (2021). The efficacy of cognitive behavioural therapy-based interventions on patients with hypertension: A systematic review and meta-analysis. *Preventive Medicine Reports, 23*, 101477. https://doi.org/10.1016/j.pmedr.2021.101477

Modey Amoah, E., Esinam Okai, D., Manu, A., Laar, A., Akamah, J., & Torpey, K. (2020). The role of lifestyle factors in controlling blood pressure among hypertensive patients in two health facilities in urban Ghana: A cross-sectional study. *International Journal of Hypertension, 2020*, 1–8. https://doi.org/10.1155/2020/9379128

Mucci, N., Giorgi, G., De Pasquale Ceratti, S., Fiz-Pérez, J., Mucci, F., & Arcangeli, G. (2016). Anxiety, stress-related factors, and blood pressure in young adults. *Frontiers in Psychology, 7*, 1682.

Newlove-Delgado, T., Williams, T., Robertson, K., McManus, S., Sadler, K., Vizard, T., Cartwright, C., Mathews, F., Norman, S., Marcheselli, F., et al. (2021). *Mental health of children and young people in England 2021: Wave 2 follow-up to the 2017 survey*. NHS Digital.

Oo, W. J., Lim, C. L., Goh, M. H., & Koh, R. Y. (2025). Serum cortisol and cardiovascular disease risk: A potential biomarker. *Current Cardiology Reviews, 21*. https://doi.org/10.2174/011573403x328499241106064553

Rapee, R. M., Creswell, C., Kendall, P. C., Pine, D. S., & Waters, A. M. (2023). Anxiety disorders in children and adolescents: A summary and overview of the literature. *Behaviour Research and Therapy, 168*, 104376. https://doi.org/10.1016/j.brat.2023.104376