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May 2nd, 12:00 AM

The Impact of Stress During Adolescence and the Prevalence of Pediatric Obesity

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Olakunri, Olatunbosun and Venkataraman, Venkat, "The Impact of Stress During Adolescence and the Prevalence of Pediatric Obesity" (2024). *Rowan-Virtua Research Day*. 118.
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The Impact of Stress During Adolescent life and the prevalence of Pediatric obesity in the United States.

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Introduction

Pediatric obesity is a growing concern in the United States. The rate of obese adolescents has been increasing and continues to rise without much opposition. The prevalence of obesity in the United States remains extremely high, at almost 10% of the infant and toddler populations, and 17% of children and teens. While the prevalence has stabilized somewhat over the past years, rates of severe obesity continue to climb, especially in high-risk populations. It has become evident that the prevalence of pediatric obesity has been rising particularly in the populations and communities that experience significantly increased levels of stressors from various avenues. Pediatric and adolescent obesity frequently coexists with stress-related symptoms and disorders. Stress, the state of threatened homeostasis, is associated with the acute activation of the hypothalamic–pituitary–adrenal axis and the sympathetic nervous system. Stress is a state in which a person’s homeostasis is threatened and is associated with the acute activation of a person’s sympathetic nervous system. Childhood obesity is a multifactorial health condition and should be addressed as such. Obese children experience a myriad of psycho-social stressors that impact that quality of life and well-being. It is imperative that physicians not only evaluate one’s body composition, but also the psycho-social issues that a person experiences to understand the full scope of their patient’s health status.

Purpose and Methods

Purpose: Pediatric obesity has been on the rise and increasing in the prevalence throughout the United States. The purpose of this paper is to assess the various stresses adolescents are exposed to and how they contribute to the development of obesity in pediatric patients. This assessment is to determine the stress related risk factors associated with pediatric obesity, and how both the patients and physicians can work together to combat the development of obesity in the United States. Through this study, it is the hope to reveal various interventions and management therapies going forward to decrease the prevalence of pediatric obesity.

Methods: A structured review of current literature was used to understand the association between the prevalence of pediatric obesity and the psycho-social stressors experienced by the adolescent population. To evaluate this correlation, a database search was done through the Rowan School of Osteopathic Medicine Online Library.

Results

Chronic activation of the sympathetic nervous system and release of cortisol due to stress can lead to various psychopathological and metabolic conditions. Continuous exposure to stressors, and continuous release of cortisol cause the body to constantly develop new set points for cortisol which leads to impairments in cortisol reactivity, stress sensitivity, increased blood glucose, as well other metabolic factors. The exposure to chronic physiological stress leads to derangements in adiposity, eating behaviors, and also increases the risk for developing chronic diseases. It has traditionally been believed that obesity led to depression, due to the social stigmatization that leads to shame, guilt, and isolation that lead to depression during adolescence. Recent studies provide convincing evidence that obesity is the physical manifestation of neuroendocrine processes associated with depression. Adolescents that come from communities that are on the decline, with increasing poverty and unemployment rates have increased risk of developing chronic disease such as obesity. Physicians’ implicit bias has been linked to decreased satisfaction and trust in their provider amongst minority patients. This patient dissatisfaction and distrust often leads to their unwillingness to share the full scope of their situations which ultimately leads to the provider being unable to provide best quality of care for their patients.

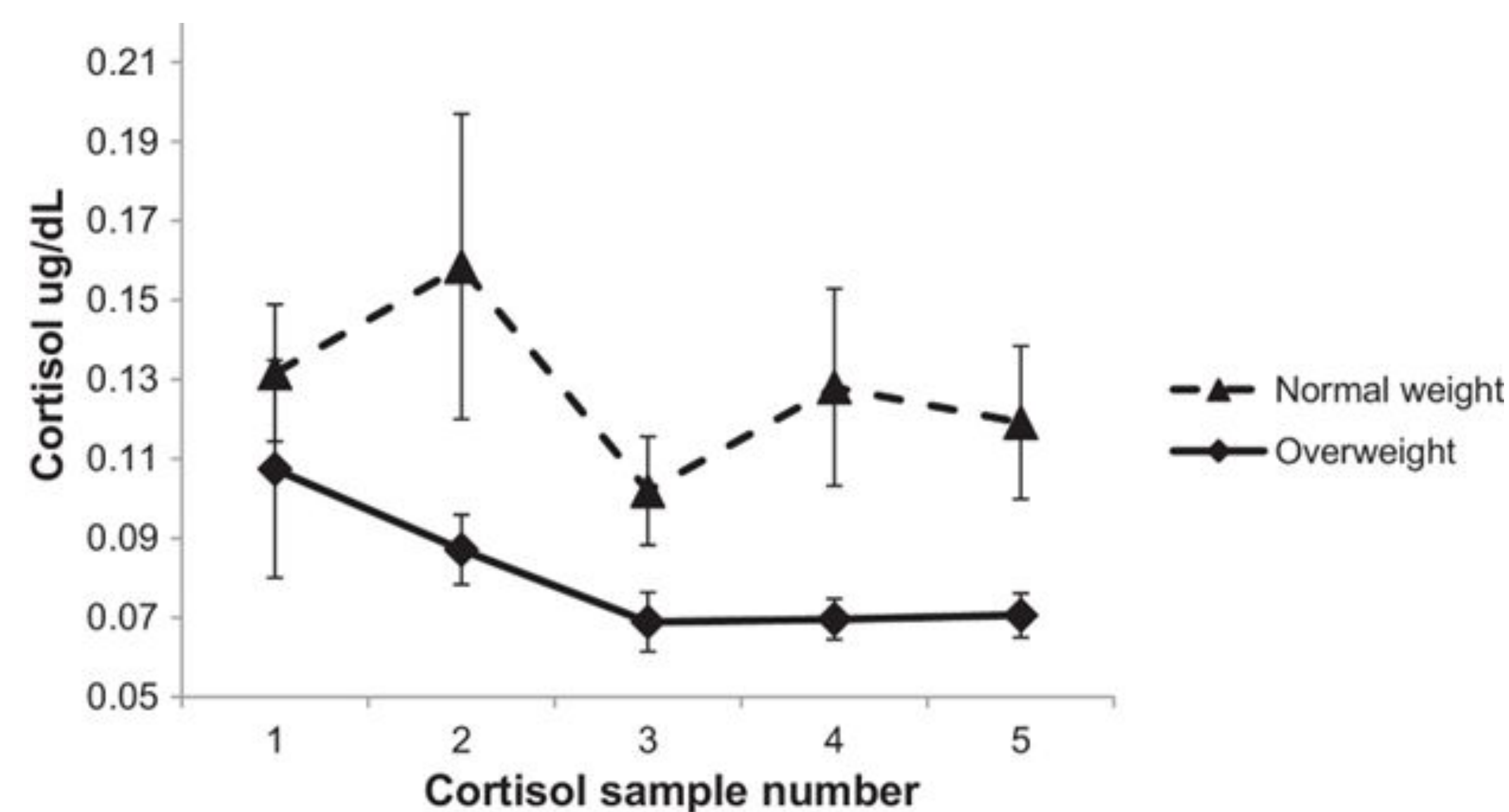


Figure 1. Cortisol reactivity to stress in normal weight (n = 129) and overweight children (n = 89). Notes: 1. Bars represent standard errors. 2. Cortisol sample numbers reflect: (1) 20 min after room entry; (2) 30 min after room entry (during free play); (3) 10 min after disappointing gift receipt; (4) 20 min after gift receipt; (5) 40 min after gift receipt.

Discussion

The adolescent population faces various internal and external stressors that contribute to the development and prevalence of pediatric obesity in the United States. The period of adolescence is a period of increased stress experienced during one’s lifetime. Childhood obesity is a public health epidemic that is associated with various negative physical, emotional, and psychosocial consequences within our current community. Stress appears to be one of the main contributors of the prevalence of pediatric obesity in our society today, yet it still continues to be an overall poorly understood phenomenon. Studies have shown that excessive exposure to stressors during this period can contribute to development of chronic diseases during their lifetime. Chronic activation of the HPA axis and subsequent release of cortisol, leading to cortisol sensitization, is the prime physiological mediator in the birth and development of pediatric obesity. The prevalence of depression in the pediatric population positively correlates with the prevalence of obesity in pediatric populations throughout the United States. Studies have shown that the rates of pediatric depression and stress throughout the United States appear to be interdependent; as in depression can lead to obesity, while obesity can also lead to depression.

References

1. Brown CL, Halvorson EE, Cohen GM, Lazorick S, Skelton JA. Addressing Childhood Obesity: Opportunities for Prevention. *Pediatr Clin North Am.* Oct 2015;62(5):1241-61. doi:10.1016/j.pcl.2015.05.013
2. Pervanidou P, Chrousos GP. Stress and Pediatric Obesity: Neurobiology and Behavior. *Family Relations.* 2016/02/01 2016;65(1):85-93. doi:https://doi.org/10.1111/fare.12181
3. Sagar R, Gupta T. Psychological Aspects of Obesity in Children and Adolescents. *Indian J Pediatr.* Jul 2018;85(7):554-559. doi:10.1007/s12098-017-2539-2
4. McEwen BS, Stellar E. Stress and the individual. Mechanisms leading to disease. *Arch Intern Med.* Sep 27 1993;153(18):2093-101.
5. Young EA, Nolen-Hoeksema S. Effect of ruminations on the saliva cortisol response to a social stressor. *Psychoneuroendocrinology.* Apr 2001;26(3):319-29. doi:10.1016/s0306-4530(00)00059-7
6. Brotman LM, Dawson-McClure S, Huang KY, et al. Early childhood family intervention and long-term obesity prevention among high-risk minority youth. *Pediatrics.* Mar 2012;129(3):e621-8. doi:10.1542/peds.2011-1568