

## Role of Stress in Erectile Dysfunction: A Review

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### Abstract

Erectile dysfunction (ED) is a complex disorder that is studied to be of multifactorial in etiology. Although it commonly affects men above 50, there is also an increased incidence of ED observed in young men today. Several systemic disorders have been found to be linked to ED. Stress is a common disorder that affects a large population and is found to be a cause for ED in middle aged men. This article is an attempt to summarize the evidences in literature that studied the association between stress and ED and also the management if stress associated ED.

**Keywords:** Erectile dysfunction, Stress, Inflammation, Sexual disorders.

### 1. INTRODUCTION

Stress is a common disorder in the present day life. Prolonged stress can have a detrimental effect on the systemic health of the individual. This includes immunosuppression, loss of libido, cardiovascular diseases and inflammatory diseases. [1] In men, stress is shown to potentially cause sexual disorders of which Erectile Dysfunction (ED) is of greater significance.

Erectile dysfunction is a common sexual disorder which is characterized by the disability to get an erection during sexual activity. [2] It is more common in men above 40 years of age. [3] There have been several factors that are studied to be causing ED such as neurogenic, cavernosal, psychological, hormonal and drugs, [4] however, the most commonly explained pathophysiology is vascular disease. [5]

#### 1.1. Pathogenesis of Erectile Dysfunction

Followed by sexual stimulation, there is a relaxation of smooth muscles and vasodilatation in the penis. This is mediated by certain neurotransmitters in the brain and also by mediators such as Nitric Oxide (NO) and Cyclic GMP (cGMP). A downregulation of these mediators at any level or the alterations in the autonomic activity can lead to failure in attaining an erection leading to ED. [6]

#### 1.2. Mechanisms by which Stress can Cause ED

Stress can cause release of catecholamines which on a prolonged period can cause hypertension. [7] Erectile competence may be affected in multiple ways by the variations in autonomic activity basally present in hypertension, such as an increased sympathetic activity. This neurophysiological alteration can lead to several sexual disorder including premature ejaculation and ED and is considered one of the most attributable cause in the development of ED in stressed individuals or the worsening of already existing ED. [8]

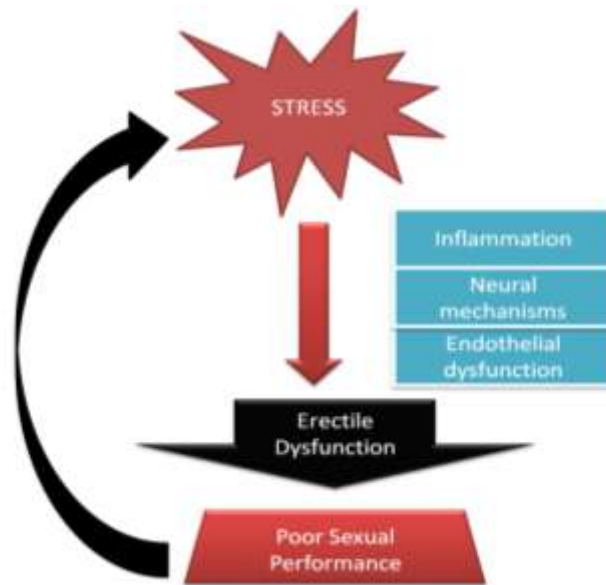
Stress can also cause an increase in the systemic inflammation. This essentially involves release of certain chemical mediators including interleukins. Also, stress can lead to increased steroid levels and certain vasoconstrictors. All of these changes collectively can lead to endothelial dysfunction. [9]

Furthermore, mental stress can cause a dysregulation of circulatory mechanisms in both acute and chronic phases. Vascular disorders are considered to be the main etiological factor in development of ED. It can potentially impair the blood flow to the penis during sexual stimulation which can lead to an inability to attain and maintain an erection.

An increase in the oxidative stress can decrease the chemical mediators such as NO which is

essential for erection to happen. This is also considered a mechanism by which prolonged mental stress can cause ED. [9] Individuals with existing ED can have stress due to poor sexual

performance which can further contribute to stress thus leading to worsening of the condition (Figure 1).



**Figure1.** The diagrammatic representation of stress causing ED

## 2. CONCLUSION

ED is a complex disorder with several factors playing a role. The hemodynamic and neurological changes caused by mental stress can contribute to ED. For the successful management of ED, examination for stress and other lifestyle diseases should be performed as a part of the initial diagnosis. Management of stress can be beneficial in treating ED. Furthermore, the still largely unexplored interaction mental stress and sexual disorders requires further investigations and large scale clinical trials.

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**Citation:** Dr. Akhil K Padmanabhan, MDS. *Role of Stress in Erectile Dysfunction: A Review*. *ARC Journal of Urology*. 2020; 5(1):1-2. DOI: <https://doi.org/10.20431/2456-060X.0501001>.

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