

Stress and Kidney Disease

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Modern Life is full of stress. Everyone around us is living their lives with various types of stress. It's become a part of our life. Stress is anything that upsets or disrupts a person's usual psychological and/or physical balance. Stress has 3 forms: Major life events, chronic strains, hassles.¹ Any occurrences that requires a short period of time for behavioral modification is under Major life event category (eg: Death of beloved person, fired from a job etc.). When a stress recovery need prolonged period of time is under chronic strain category (eg: disability, poverty). Hassles that we face in daily activities (eg: Traffic Jam, communicating with wrong or rude people). Researchers conducted various studies to find out the relationship between stress and health and found that perceptions of stressors are the primary determinants of behavior and health status.^{2,3}

Peoples living under intense levels of stress for long period of time, creates physical reactions that can harm the body's health. Stress comes out with some other effects such as high blood pressure, increased heart rate, high sugar & fat levels in blood which can damage our important body organs such as Kidney, Heart etc.^{4,5}

Mental Stress as a Contributor to Kidney Disease Progression

Followings are some key points to Mechanisms by which mental stress affect kidneys

1. **Physiological stress:** Chronic stress triggers HPA axis (Hypothalamus, Pituitary gland, Adrenal glands) activation in the body. These will produce high amount of cortisol in the body and also activate sympathetic nervous system (SNS). These may increase blood pressure,

renal vasoconstriction and accelerate renal injury.⁶

2. **Inflammation, oxidative stress and dysbiosis:** these are interconnected factors that contribute the development and progression of renal diseases. Inflammation within Kidneys can lead fibrosis and deterioration of renal function.⁷ Oxidative stress is an imbalance between reactive oxygen species (ROS) and the body's antioxidant defenses. ROS can directly damage kidney cells and promote fibrosis by stimulating the production of extracellular matrix proteins.⁸ Dysbiosis leads to inflammation and oxidative stress which damage the kidneys.⁹ Damaged kidneys can lead to further dysbiosis and contributes to complications like cardiovascular diseases and end-stage renal diseases (ESRD).
3. **Behavioural issue:** Stress, anxiety and depression can impair daily life management process which causes poor dietary choices, reduces physical activity, smoking or poor sleep. These behaviors in turn worsen kidney outcomes.¹⁰

Kidney Diseases as a Source of Stress

Kidney diseases also act as a source of mental stress. Rates of depression and anxiety are significantly higher among patients with kidney disease compared with the general people. A study in UK found moderate to severe symptoms in 26.5%

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and 37.7% of patients for anxiety and depression respectively.¹¹ A study from Ireland highlighted high levels of psychological distress, suicidal ideation and mental health diagnoses in CKD patients. Stressors include lifestyle disruption (dialysis, dietary restrictions), uncertainty about prognosis, comorbidity burden, physical symptoms such as fatigue and sleep disturbance and psychosocial isolation.¹²

In our country, the interaction between mental stress and kidney disease has following relevance:

- High cost for dialysis which create extra burden on financial strain on patients and their families.
- Limited availability on mental health integration into nephrology care.
- Cultural and logistical barriers to mental health discussion (stigma, lack of trained counselors)
- To delay CKD progression, integration of kidney care with physiological health support is needed.

Kidney care services in Bangladesh should incorporate screening for psychological distress, referral for mental health support and patient education programmes emphasizing stress management. Interventions to improve efficacy and coping may reduce behavioral risk (non-adherence, poor diet) and thus may improve renal prognosis.

Mental stress and kidney disease are intimately connected in a bidirectional relationship: stress can accelerate renal dysfunction, and kidney disease imposes psychological burdens that worsen outcomes. Recognizing and addressing this interplay is particularly important in Bangladesh, where kidney disease is prevalent and psychosocial resources is limited. By integrating mental health screening, stress management interventions and holistic care in nephrology practice, we can improve patient's quality of life and delay kidney diseases progression. So,

decrease stress, maintain healthy lifestyle, thus enjoy happy life.

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