# THE SIGNIFICANCE OF RISK FACTORS AND NUTRITIONAL STATUS IN THE DEVELOPMENT OF KIDNEY STONE DISEASE

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**Abstract.** This thesis examines the mechanisms underlying the development of kidney stone disease (nephrolithiasis), its major risk factors, types of urinary stones, clinical manifestations, and preventive measures. Urinary supersaturation, reduced concentrations of crystallization inhibitors, and impaired urinary flow are identified as key factors contributing to stone formation. The importance of adequate fluid intake and appropriate dietary habits in reducing the risk of disease recurrence is also discussed.

**Keywords:** kidney stone disease, dietary management, healthy nutrition, symptoms, prevention.

**Introduction.** Kidney stone disease is one of the most common disorders of the urinary tract and accounts for a substantial proportion of urological cases. According to the international literature, the disease affects approximately 10-12% of the adult population and is more frequently observed among individuals aged 20-50 years, representing the economically active population. The incidence is approximately twice as high in men as in women. Over recent decades, the prevalence of kidney stone disease has increased in association with changes in lifestyle, physical inactivity, obesity, and unhealthy dietary habits.

A major characteristic of nephrolithiasis is its high recurrence rate. Following treatment, stones may recur in approximately half of affected patients within 5-10 years. Therefore, a comprehensive understanding of the mechanisms underlying stone formation and the development of effective preventive strategies remain important medical and public health priorities

**Objective.** To analyse the significance of risk factors and nutritional status in the development of kidney stone disease.

**Results and Discussion.** Risk factors**.** Research findings highlight the importance of several groups of risk factors: Dietary factors**:** inadequate fluid intake; excessive consumption of salt and animal protein; and excessive intake of oxalate-rich foods, such as spinach and nuts, as well as strong tea. Metabolic disorders: obesity, diabetes mellitus, gout, hyperparathyroidism, and hypercalciuria. Urological factors: urinary tract infections, impaired urinary flow, and congenital abnormalities of the kidneys and urinary tract. Genetic predisposition: a family history of kidney stone disease significantly increases the risk of developing the condition. Environmental and lifestyle factors: hot climatic conditions, occupational exposure associated with dehydration, physical inactivity, and prolonged use of certain medications. Small stones, generally measuring up to approximately 5-6 mm, may pass spontaneously and can often be managed with observation and appropriate analgesic therapy. For larger stones, contemporary minimally invasive treatment methods are used, including extracorporeal shock wave lithotripsy, ureteroscopy, and percutaneous nephrolithotomy. Stones associated with fever or urinary tract obstruction require urgent medical assessment and, when indicated, emergency intervention. The


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following measures are important in reducing the risk of recurrence: Maintaining adequate fluid intake, generally around 2.5-3.0 litres per day, with the aim of achieving a urine output of at least 2.0-2.5 litres per day, where clinically appropriate. Moderating dietary salt and animal protein consumption. Ensuring adequate dietary calcium intake, as excessive calcium restriction may increase the risk of stone formation. Including lemons and other citrus fruits in the diet, as citrate may inhibit the formation of certain types of urinary stones. Maintaining a healthy body weight and engaging in regular physical activity. Identifying and treating urinary tract infections promptly. Ensuring regular urological follow-up for patients with a history of kidney stone disease.

**Conclusion.** Risk factors and nutritional status play an important role in the development of kidney stone disease. Unhealthy dietary habits, excessive salt consumption, insufficient fluid intake, and metabolic disturbances increase the risk of stone formation. A balanced diet and adequate daily fluid intake are essential components of kidney stone prevention. Maintaining a healthy body weight and increasing physical activity also contribute to risk reduction. Dietary recommendations should be individualised according to the patient's clinical characteristics and the chemical composition of the stones. Early identification and modification of risk factors may reduce the likelihood of recurrence. Thus, a healthy lifestyle and appropriate dietary practices are essential for preventing kidney stone disease and maintaining patients' long-term health.

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