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A case–control study on environmental and biological risk factors for renal calculi persisting in a coastal Union Territory, India

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Objectives: To determine the role of biological and environmental risk factors among renal stone patients in a coastal union territory region of South India

Methods: The authors conducted a case–control study of renal stone disease among outpatient department patients more than 30 years of age using systematic random sampling procedure with 100 study participants (50 subjects for each group). A questionnaire to explore some relevant history as well as to note general examination findings was used. A house visit was made to collect a sample of drinking water which was analyzed in laboratory for pH, turbidity, hardness, calcium, magnesium, sodium and chloride salts. Analysis was undertaken using appropriate statistical techniques.

Results: The study showed statistically significant association for renal stones with female sex, illiteracy, body mass index (BMI) ($>25 \text{ kg/m}^2$), sodium ($>50 \text{ mg/L}$), water consumption ($<1.5 \text{ L/day}$), water source being borewell, consuming soft drink, sedentary work, and family history of renal stones. The adjusted odds ratios (ORs) were significantly higher for consuming soft drink (OR: 8.19; 95% confidence interval: 1.99–33.69), sedentary work (10.01; 1.27–78.91), and water consumption $<1.5 \text{ L/day}$ (7.73; 2.24–26.69).

Conclusions: The study concluded that in this part of India, female gender, illiteracy, high BMI, high sodium in drinking water, inadequate water consumption, borewell drinking water, soft-drink consumption, sedentary work, and family history of renal stones can lead to a significant increase in the risk of renal stone disease.