

Incidence of Renal Calculi and Quality of Drinking Water in Kurunegala District

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There is an increasing prevalence of renal calculi in certain districts in Sri Lanka such as Anuradhapura and Kurunegala. Renal calculi are inorganic crystalline aggregates that develop in kidneys and urinary tract. High concentrations of chemical constituents such as calcium oxalate, calcium phosphate and uric acid and low pH of the urine are some of the factors that contribute to formation of renal calculi. However, the calculi formation process in the body is not properly understood. Presence of mineral salts in drinking water is commonly known as water hardness. There are two types of water hardness: temporary and permanent. Temporary hardness can be removed through boiling while permanent hardness cannot be eliminated through boiling. The present study was carried out to: (i) investigate whether there is a relationship between the incidence of renal calculi and temporary hardness of drinking water in selected areas of Kurunegala district. (ii) determine whether the use of boiled water has an impact on formation of renal calculi.

A sample of 200 patients diagnosed with renal calculi attending the teaching Hospital Kurunegala was surveyed using a self-administered questionnaire. Drinking water samples from each area where the patients resided were collected for analysis. Temporary hardness of water samples was determined titrimetrically.

Temporary hardness of water in Kurunegala ranged from 90 – 270 mg/L of water. The study revealed that there was a weak relationship ($r^2 = 0.164$) between the incidence of renal calculi and temporary hardness of drinking water in the Kurunegala district. It was also revealed that 83% of males and 74% of females do not use boiled water for drinking.