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Drinking water quality and associated risk factors among chronic kidney disease of unknown etiology patients at Nephrology clinic, Divisional hospital, Padavi Sripura

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Introduction & Objectives: Chronic Kidney Disease of Unknown etiology (CKDu) is a major public health concern in Sri Lanka, particularly in dry zone agricultural areas. Drinking water quality and agrochemical exposure have been reported as potential contributors. This study aimed to evaluate the drinking water quality and the associated risk factors for CKDu among patients at Nephrology clinic of Divisional Hospital Padavi Sripura.

Materials & Methods: Forty-eight CKDu patients were included in this study. Clinical and and other related data were obtained from both clinic records and interviewer-administered questionnaire. Drinking water samples were analyzed for pH (pH meter), electrical conductivity (EC) (conductivity meter), total dissolved solids (TDS) (gravimetric analysis), total hardness (TH) (EDTA titrimetric method) and fluoride concentration (ion selective electrode). Data were analyzed using Spearman's rank correlation, Kruskal- Wallis test, and multiple linear regression.

Results: Among 48 participants, 81.25% were males. Farmers accounted for 68.75%. Well water was the primary drinking water source of participants (85.42%). Dug and tube well water showed pH, 7.01 ± 0.17 (SLS: 6.5-8.5), EC, 1007.93 ± 371.23 µS/cm (SLS: 750), TDS, 752.81 ± 253.14 mg/L (SLS: 500), TH 420.00 ± 137.18 mg/L (SLS: 250), and fluoride 0.68 ± 0.20 mg/L (SLS: 1.0). Filtration significantly reduces EC, TDS, TH, and fluoride ($p < 0.05$), whereas boiling produces minimal reduction in EC, TDS, and TH. Scr was positively correlated with EC ($\rho = 0.624$, $p < 0.001$), TDS ($\rho = 0.602$, $p < 0.001$), TH ($\rho = 0.366$, $p = 0.011$), and fluoride ($\rho = 0.474$, $p = 0.001$). TDS was identified as the only significant predictor of Scr.

Conclusions: The findings suggest poor drinking water quality, particularly high TDS and mineral content are associated with impaired kidney function among CKDu patients in Padavi Sripura. However, it needs further validation with large sample size.

Keywords: *Chronic kidney disease of unknown etiology, Water quality, Serum creatinine, Total dissolved solids.*