

Evidence of Paediatric Renal Injury in Farming Communities Residing in Highly Agricultural Areas in Sri Lanka: A Cross-Sectional Study with Urinary Biomarkers

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Abstract

Intensive use of agrochemicals and unsafe handling practices are commonly identified in farming communities residing in highly agricultural areas. Although they do not directly involve in field work, exposure via aerosols, contaminated water, and improper domestic storage of agrochemicals may make the females and children in farming families more likely to be exposed to risk factors of kidney injury. However, kidney health of these paediatric communities has not been properly studied in Sri Lanka. The present study aimed to perform a comparative assessment of paediatric kidney health in farming families compared to non-farming families in selected regions in Sri Lanka, where crop cultures are extensively practiced. This cross-sectional study was performed with children and adolescents (10–17 years old) representing paddy and vegetable farming families with Chronic Kidney Disease of unknown aetiology (CKDu) in endemic and non-endemic regions (n=674) in Sri Lanka, along with an age-matched control group from non-farming families in within the same residential areas (n=722). The median (interquartile range) of urinary KIM-1 (ng/mg.Cr) 0.21 (0.63-0.44) and urinary Cystatin C (ng/mg.Cr) 56.10 (22.94-134.91) levels of the participants in the farming families in CKDu endemic regions were significantly (p<0.0001) elevated compared to their counterparts in non-farming families in the same area. Weak but significant positive correlations were identified in the children's urinary NGAL levels and UACR values with the factor of their parent's involvement in farming. Baseline evidence of elevated urinary biomarker levels indicates a notably higher risk of kidney injury for children in farming families. However, studies with longitudinal observations with a particular focus on environmental exposures to potential risk factors are recommended to elucidate paediatric renal health outcomes associated with the farming lifestyle.

Keywords: *Biomarkers, Kidney injury, Paediatric*