

## **Body weight status and implications on kidney health of the pediatric communities in the dry climatic zone in Sri Lanka: A cross-sectional study**

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Unhealthy bodyweight is associated with multiple clinical complications that serve as potential risk factors for kidney diseases. However, pediatric renal outcomes associated with the bodyweight status are not properly understood in many communities. Hence, the aim of this study was to assess potential associations of bodyweight status with renal health of selected pediatric communities in the dry climatic zone of Sri Lanka. This cross-sectional study was conducted with school students of both genders 13-16 years of age (N=326) in selected education divisions in dry zone regions where chronic kidney disease of uncertain etiology (CKDu) is not evident. Mid-stream early morning urine samples of the students were assessed for creatinine and albumin using an automated clinical chemistry analyzer. Quantitative assessment of urinary kidney injury molecule (KIM-1) and neutrophil gelatinase-associated lipocalin (NGAL) was based on enzyme-linked immunosorbent assay (ELISA). Age and gender-specific World Health Organization guidelines (LMS-based body mass index (BMI) percentiles), adopted by the family Health Bureau of the Ministry of Health, Sri Lanka, were used to assign the students into four BMI strata: underweight, normal, overweight, and obese. Urinary KIM-1, NGAL, and albumin creatinine ratio (ACR) were used as the criteria to interpret renal function. The median levels of biomarkers, NGAL, ACR and particularly KIM-1 which is a more sensitive indicator of renal injury, showed no significant difference across the four BMI strata in both girls and boys. Also, the median levels of the three biomarkers showed no significant difference between the girls and boys within the same age stratum. Furthermore, BMI did not significantly correlate with urinary KIM-1, NGAL, and ACR in the three age strata, while very weak correlation of age was observed with BMI. Our findings did not produce plausibly strong evidence to establish a potential link between bodyweight status and altered renal function in the studied dry-zone pediatric communities. However, longitudinal studies with increased sample size and broader age range are warranted to make more accurate interpretations on potential associations of longstanding unhealthy bodyweight with pediatric renal health in Sri Lanka.

**Keywords:** Body mass index, Pediatric, Kidney injury, Biomarkers, Sri Lanka, KIM-1, NGAL, ACR.

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