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# Association between body mass index and hemoglobin level with disease severity of chronic kidney disease undetermined etiology in Sri Lanka

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**Objectives:** Chronic kidney disease undetermined etiology (CKDu), which is concentrated in North Central Province (NCP) identified as a multifactorial fatal disease. Among those risk factors, body mass index (BMI) and hemoglobin is recognized as main key factors related to the under-nutrition in CKDu. The main objective was to determine the association between BMI and hemoglobin level with CKDu disease severity in Sri Lanka.

**Methods:** A descriptive cross-sectional survey conducted among diagnosed CKDu patients in Wilgamuwa region in NCP, Sri Lanka. A total of 200 participants ranged from 31 to 71 years in this study had underwent blood test, anthropometric measurements including height, weight and BMI and demographic characteristics data collection. All statistical analysis performed using SPSS version 20. According to the estimated glomerular filtration rate (eGFR )[ml/min/1.73m$^2$], CKDu was graded as early (eGFR60) and late (eGFR 60) stage.

**Results:** The mean age, BMI and hemoglobin of the study participants was 57.758.093 years, 20.673.566 Kgm$^{-2}$ and 12.281.867 g/dl respectively. From the total, 75% (n=150) were in late stage and 25% (n=50) in early stage. Majority of them had (61.5%; n=123) had normal BMI (18.5-24.9 Kgm$^{-2}$) while 26% (n=52), 11% (n=22), 1.5% (n=3) contradictory were underweight (18.5 < Kgm$^{-2}$), overweight (25-29.9 Kgm$^{-2}$) and obese (>30 Kgm$^{-2}$) respectively. Based on the chi-square test results, BMI (p=0.013; Cramers' V=0.232) and hemoglobin (p=0.005; Cramers' V=0.242) had significant strong association with the CKDu disease severity. Moreover, 82.7% (n=43) of the underweight and 93.3% (n=42) of the anemic patients were in the late stage of CKDu. Additionally, statistical significance difference of BMI (p=0.001), hemoglobin level (0.000) with gender and positive correlation between BMI and hemoglobin level (p=0.003; r=0.217) were noted.

**Conclusions:** Statistically significant associations were observed in BMI, hemoglobin level and CKDu disease severity. Underweight and anemia was highly presented with late stage of the CKDu.