ABSTRACT

BACKGROUND:
Diabetic nephropathy, a microvascular complication of diabetes mellitus,is fast becoming a predominant cause of ESRD in sub-saharan Africa. Resistive index has been shown to be of value in assessing renal functional status.

OBJECTIVES:
To determine the frequency and predictors of elevated resistive index and the relationship between resistive index and renal function of subjects with diabetic nephropathy

SUBJECTS AND METHODS:
One hundred and forty-five people were recruited for the study that included Forty (40) subjects who were apparently healthy controls, Forty-two (42) subjects had diabetes mellitus (DM) without nephropathy and Sixty-three (63) had diabetic nephropathy (DN). For each patient, socio-demographic, clinical examination, HbA1c, renal doppler ultrasound were recorded. Urinary albumin creatinine ratio (UACR) and estimated glomerular filtration ratio (eGFR) were also determined from early morning urine and serum creatinine respectively. Renal ultrasound was carried out on all participants with resistivity index across left and right renal artery recorded. Statistical analysis was performed using STATA 20. Spearman’s rank correlation was used to determine correlation between resistivity index and interested continous variables while one – way ANOVA was used to compare resistivity index across the 3 groups. Regression analysis was carried out to determine variables independently correlated with resistivity index.

RESULTS:
The mean age of the patients of each group of participants were; 52.9 (6.4) years among the control group 57.4(8.2) years among the DM without nephropathy group and 57.7 (7.5) years for the DM with nephropathy group The mean RI for the diabetic nephropathy group, diabetic group and controls 0.70±0.06, 0.61±0.04 and 0.54±0.04 respectively (p <0.001). It was noted that participants in the DM and DM with nephropathy group had higher resistivity index on the right interlobar renal artery when compared to the left interlobar renal artery. Chi-square for trend analysis showed significant increase in frequency of CKD patients with increase in resistivity index. Spearman’s rank correlation results showed no association between Microalbumunuria and RI in any of the participant groups. There was moderate correlation (rho-value:-0.65) between RI and eGFR among the participants with DN

CONCLUSION:
The evaluation of the kidneys with doppler ultrasound using resistivity index in patients with diabetic nephropathy is reliable and valid, and may have a role in the diagnosis of renal disease among diabetic patients with nephropathy.