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Occurrence of microalbuminuria and the associated risk factors in type  
2 diabetes mellitus patients at the time of diagnosis

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## **Abstract**

Microalbuminuria is a strong predictor of overt diabetic nephropathy and cardiovascular morbidity and mortality among type 2 diabetic patients. Lack of data on the occurrence of microalbuminuria and the associated risk factors in type 2 diabetics at the time of diagnosis led to this particular study.

A hospital based cross sectional, descriptive and analytical study was carried out in 3 major hospitals in the district of Kandy. The sample studied (n=268) represented newly diagnosed type 2 diabetic patients between 20 and 70 years of age from all 3 hospitals.

As determination of microalbumin level is affected by certain confounding variables such as urinary tract infection, macroalbuminuria, haematuria, cardiac failure, acute illness, vaginal discharge, menstruation, use of urinary catheters, pre-existing other renal diseases and pregnancy, the patients with those conditions were excluded from the study to minimize the number of false positives.

Persistent microalbuminuria at the time of diagnosis was defined as an albumin/creatinine ratio between 30 and 299  $\mu\text{g}/\text{mg}$  in a morning spot urine sample on at least 2 out of 3 collections done within one month after diagnosis of diabetes mellitus after excluding confounding factors.

The significantly associated

An interviewer administered questionnaire was used to collect information on factors associated with microalbuminuria and probable confounders affecting albuminuric status. Height, weight, waist circumference, hip circumference and blood pressure were measured. All the subjects were screened for diabetic retinopathy. Morning spot urine specimen collected from the subjects who refrained from strenuous physical activity or smoking. Blood sample taken for assessment of lipid profile and fasting plasma glucose. All the urine samples were screened for macroalbuminuria, haematuria and ketonuria before determination of microalbumin.

in females

The overall occurrence of microalbuminuria in type 2 diabetic patients at the time of diagnosis was 25%. There was no significant sex difference in the occurrence of microalbuminuria.

The significantly associated factors for microalbuminuria in the sample were marital status ( $P = 0.013$ ), hypertension ( $P = 0.000$ ), mean arterial pressure ( $P = 0.000$ ), smoking ( $P = 0.012$ ) and retinopathy ( $P = 0.000$ ). With a borderline significance advancing age ( $P = 0.074$ ), location of hospital ( $P = 0.076$ ) and fasting plasma glucose ( $P = 0.067$ ) were associated with microalbuminuria in the sample.

The significantly associated factors for microalbuminuria in males were advancing age ( $P = 0.047$ ), hypertension ( $P = 0.001$ ), smoking ( $P = 0.014$ ) and retinopathy ( $P = 0.000$ ). With a borderline significance, mean arterial pressure ( $P = 0.069$ ) was associated with microalbuminuria in males.

The significantly associated factors for microalbuminuria in females were location of hospital ( $P = 0.044$ ), marital status ( $P = 0.002$ ), hypertension ( $P = 0.000$ ), mean arterial pressure ( $P = 0.001$ ), retinopathy ( $P = 0.000$ ) and fasting plasma glucose ( $P = 0.047$ ). With a borderline significance, advancing age ( $P = 0.085$ ) was associated with microalbuminuria in females.

The independent risk factors for microalbuminuria in sample were hypertension ( $P = 0.000$ ), retinopathy ( $P = 0.000$ ) and marital status ( $P = 0.012$ ). The independent risk factor for microalbuminuria in males was retinopathy only ( $P = 0.004$ ). The independent risk factors for microalbuminuria in females were hypertension ( $P = 0.006$ ), retinopathy ( $P = 0.004$ ) and marital status ( $P = 0.005$ ).

In conclusion, a considerable percentage (25%) of type 2 diabetics already have microalbuminuria at the time of diagnosis where as the males with retinopathy and the females with retinopathy and/or hypertension and/or single/separated/divorced/ widowed are at more risk of having microalbuminuria at the time of diagnosis.