

IS BODY MASS INDEX INDEPENDENTLY ASSOCIATED WITH CHRONIC KIDNEY DISEASE? AN EPIDEMIOLOGICAL STUDY

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BACKGROUND: The NICE guideline for early identification and management of Chronic Kidney Disease (CKD) suggests that obesity is not an independent risk factor for CKD. This is based on a lack of evidence to support a causal link between CKD and obesity in the absence of diabetes and hypertension. However, laboratory studies support the hypothesis that obesity may have an adverse effect on kidney function via various mechanisms. These include hyperfiltration and oxidative stress, additionally obesity is known to be associated with secondary focal and segmental glomerulosclerosis.

AIM: To examine whether there is an independent association between body mass index (BMI) and estimated glomerular filtration rate (eGFR) in a large primary care population. The null hypothesis was that there was no independent correlation between high BMI and a low eGFR.

METHODS: Data were sequentially extracted from primary care records over a period of 3 years in a population of approximately 120,000 people. These anonymous data were extracted as part of the development of a computerised decision support tool. Patients were included if they were over 18, had a recorded BMI and a measured eGFR (within six months either side of their BMI measurement). Using eGFR, BMI, age, gender and co-morbidities we examined the association between BMI and eGFR. Univariate and multivariate analysis was performed using SPSS®

RESULTS: 25,350 people fulfilled the inclusion criteria, mean BMI was 28.7 (SD 6.11), 54.2% of people were female. 8936 people had a BMI > 30 kg/m² (35%). 13.6% of obese people (BMI > 30 kg/m²) and 12.5% of non-obese people had CKD stage 3-5. Multivariate analysis using age, gender and comorbidity as potential confounding variables found no association between BMI and CKD or level of eGFR. The increase in prevalence of CKD in people with a BMI over 30 is explained by differences in age, gender and co-morbidity.

CONCLUSION: There was no independent correlation between BMI and eGFR in this sample of primary care patients, supporting the statement in the NICE guideline. From our data it is probable that obesity in the absence of diabetes and hypertension does not increase the risk of CKD. Alternatively it may be that BMI is not the best measure of obesity and that alternative measures such as waist to hip ratios might show a different relationship with CKD.