

Temporal trends in prevalence of chronic kidney disease in England: comparison of nationally representative cross-sectional surveys from 2003 to 2016

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Objectives: To identify recent trends in chronic kidney disease (CKD) prevalence in England and explore their association with changes in sociodemographic, health and lifestyle risk factors.

Design: Pooled cross-sectional analysis

Setting: Health Survey for England 2003, 2009/2010 combined, and 2016

Participants: 17663 individuals (aged 16+) living in private households. Unweighted numbers with serum creatinine results were 7844 in 2003, 6053 in 2009/10 and 3766 in 2016.

Main outcome measures: Prevalence of estimated glomerular filtration rate (eGFR) <60ml/min/1.73m² and albuminuria (measured by albumin-creatinine ratio; ACR) during 2009/2010 and 2016 and trends in eGFR 2003 to 2016. eGFR was estimated using serum creatinine Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) and MDRD equations.

Multivariate logistic regression was used to examine period effects with full adjustment for age, sex, ethnicity, housing tenure, education, smoking status, body mass index, high density lipoprotein, total cholesterol, total diabetes, and total hypertension.

Results Crude prevalence of CKDEPI eGFR<60 fell between 2003 and 2009/2010 from 7.7% to 7.0% and then rose to 7.3% in 2016. Albuminuria increased from 8.2% in 2009/10 to 9.4% in 2016. Prevalence of diabetes and obesity increased during 2003-2016 whilst hypertension and blood pressure levels fell.

The age and sex adjusted odds ratio of CKDEPI serum creatinine eGFR<60 for 2016 vs 2009/10 was 1.03 (0.81-1.32) and fully adjusted 1.18 (0.92-1.52). The increase was more apparent for MDRD Scr eGFR <60 (1.16(0.95-1.42) and 1.34 (1.1-1.64)). There was no significant period effect on prevalence of albuminuria 2009/10 to 2016 in age and sex or fully adjusted models, odds ratios were 1.15 (0.89-1.47) and 1.15 (0.88-1.51) respectively.

Conclusion: There was no significant change in prevalence of eGFR<60 and albuminuria between 2009/10 to 2016. The fall in eGFR <60 seen from 2003 to 2009/10 did not continue. CKD burden is likely to rise with population ageing and if diabetes prevalence increases highlighting the need for greater CKD prevention efforts. Future studies including using cystatin C-based eGFR estimates would be valuable to monitor trends.