Ability of a UK routinely collected primary care database to identify prevalence of chronic kidney disease and renal replacement therapy

SP228

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Introduction

- Accurate estimation of disease prevalence is essential to assess the burden of CKD and RRT in the community.
- Primary care data, such as the UK Clinical Practice Research Datalink (CPRD) are an important source for observational studies.
- Although various diseases have been internally and externally validated in CPRD, there has been no validation study for CKD and RRT.
- We thus examined the external validity of CKD and RRT prevalence estimates in CPRD by comparing these with the statistics of nationally-representative surveys.

Methods

Study design: Cross sectional study on 31st March 2014.

Data source: UK Clinical Practice Research Datalink (CPRD).

•Data from 688 GP practices, accounting for 7% of the UK population.

•Representing the UK population in age, sex, and ethnicity.

Study population: All people aged ≥25 registered in CPRD for ≥1 year.

Definition of CKD and RRT:

•Single eGFR <60 mL/min/1.73m^2 using most recent serum creatinine in past 5 years.

•Diagnoses of RRT (HD, PD, or transplantation) ever recorded in CPRD.

Methods (Continued)

Reference data source:

Health Survey for England (HSE) 2009 and 2010

•People selected with a multistage stratified random probability sampling.

•Blood samples were taken from 6,000 people (77% for men and 73% for women among all the participants).

•Data were weighted for non-response to reduce response bias.

•Serum creatinine was measured by isotope dilution mass spectrometry (IDMS) traceable method.

UK Renal Registry (UKRR) 2014

•Data from all 71 renal centres in the UK.

•Prevalence of RRT estimated at the end of 2013 by dividing the number of patients on RRT by UK population in 2013.

Statistical analysis:

•Estimating prevalence of CKD and RRT in CPRD, with denominator as the entire population regardless of serum creatinine measurement (i.e. assuming people without test do not have CKD).

•Comparing CKD prevalence between CPRD and HSE, and RRT prevalence between CPRD and UKRR (95% CIs shown only for HSE with small sample size).

Results

No. of people in denominator (age ≥25): 2,761,755 in CPRD, 5,470 in HSE, and 44,600,143 in UKRR.

Fig 1. Prevalence of eGFR <60 mL/min/1.73m^2 in CPRD and Health Survey for England (HSE)

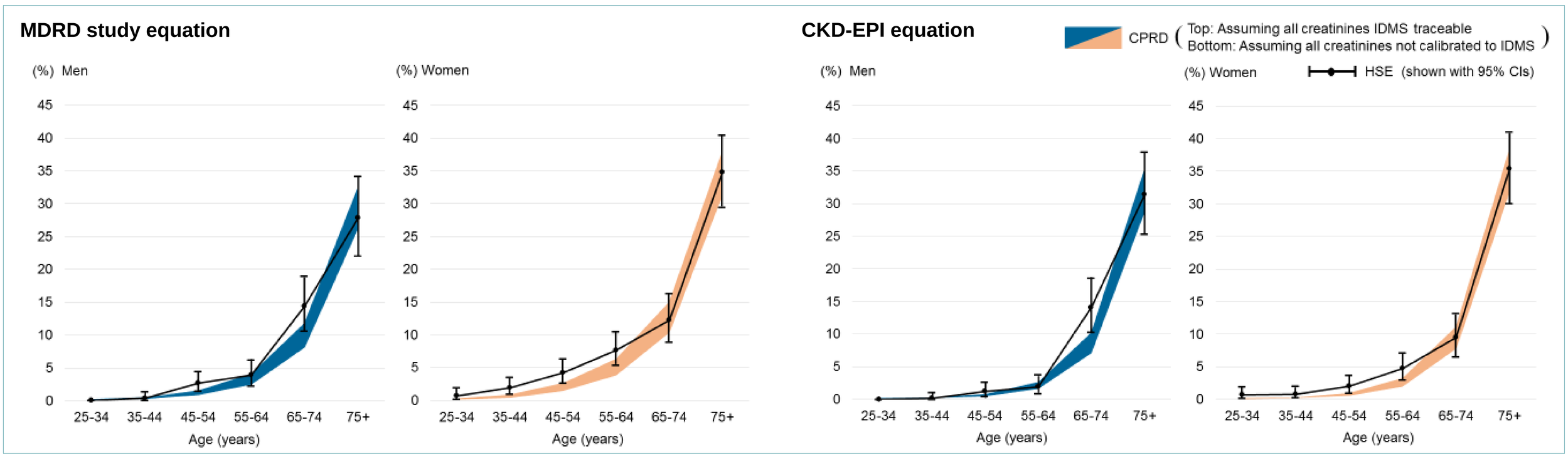


Fig 2. Proportion of creatinine testing (in past 5 years) in CPRD

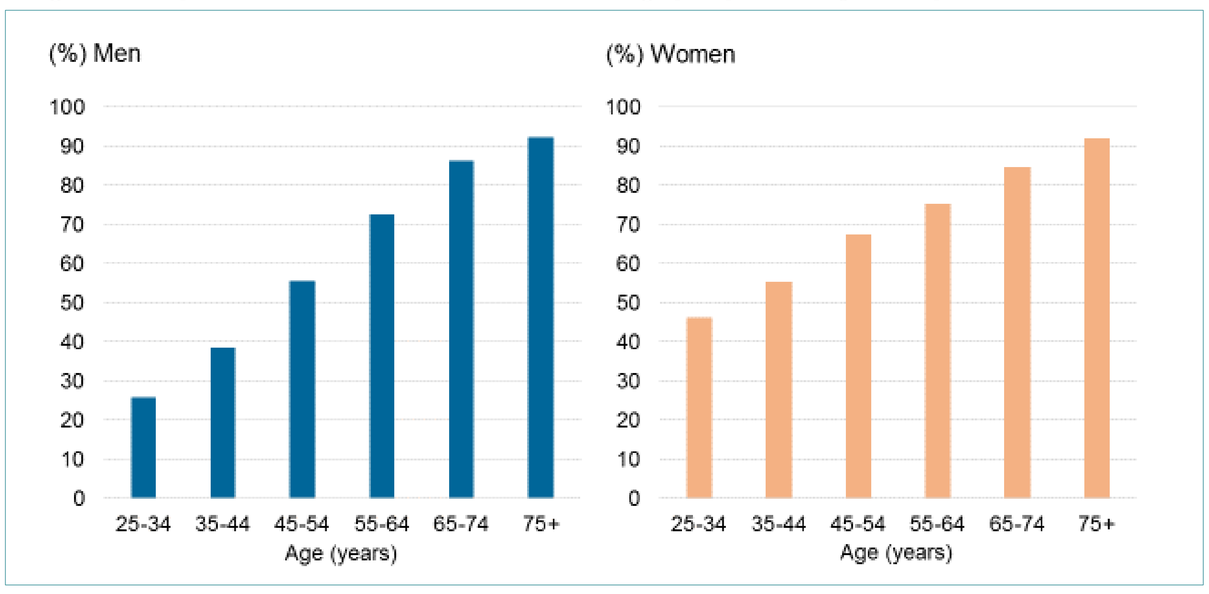
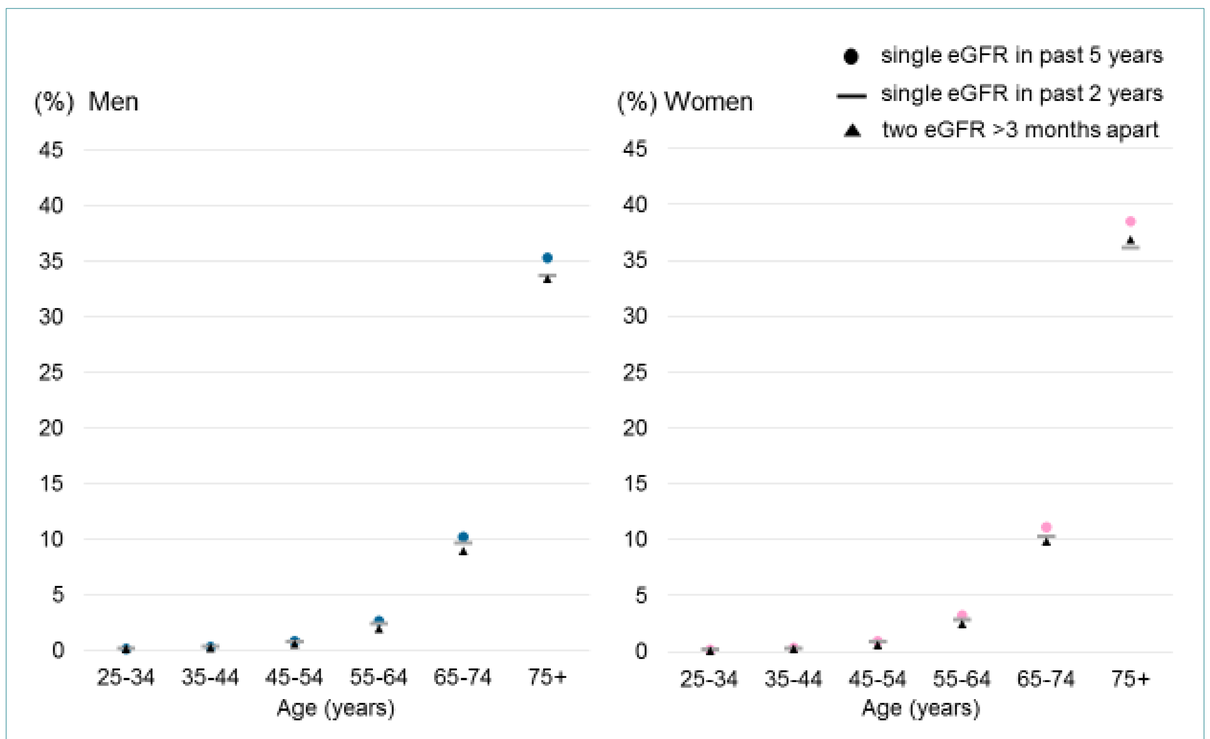


Fig 3. Sensitivity analysis: different definitions of CKD in CPRD



* All analyses used the CKD-EPI equation and assumed IDMS traceable creatinines

Fig 4. Prevalence of RRT in CPRD and UK Renal Registry (UKRR)

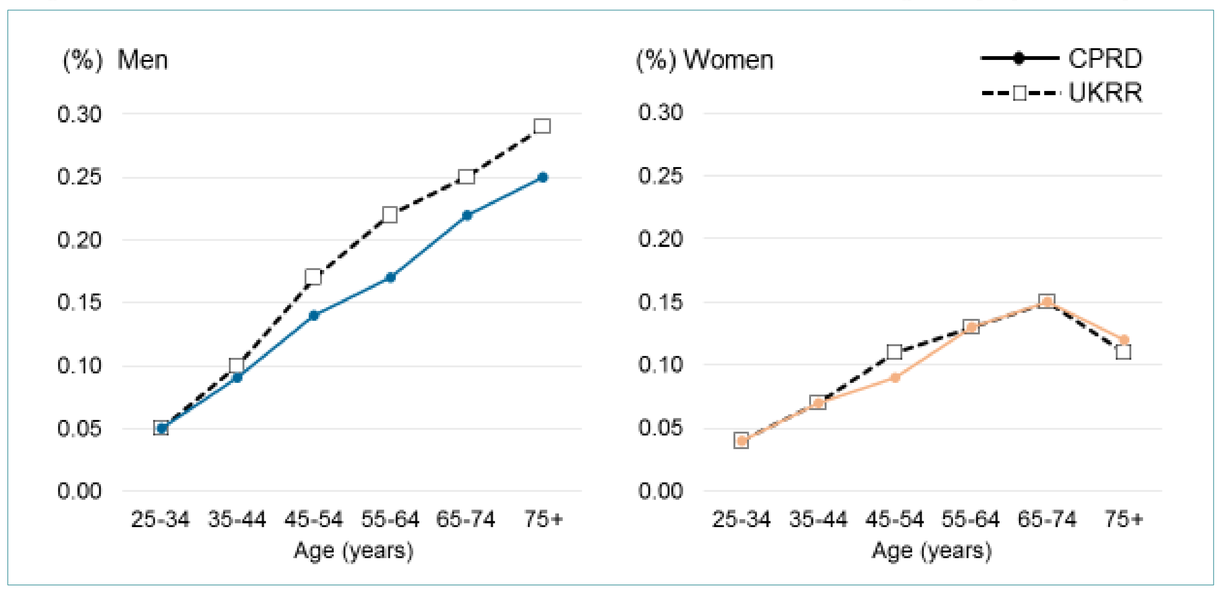


Table 1. Proportion of RRT modality in CPRD and UKRR

	RRT modality (most recently recorded)			Total	*P* value (X^2 test)
	HD	PD	Transplantation		
UKRR	41%	6%	52%	100%	<0.001
CPRD	34%	8%	59%	100%	

Discussion

- Although the proportion of people with creatinine measurement was small among younger people, (using the entire population as the denominator) prevalence of CKD in CPRD was close to that in HSE, suggesting GPs are efficiently testing kidney function amongst people at risk for CKD.
- Prevalence of RRT in CPRD was close to that in UKRR, although coding of RRT modality in CPRD underestimated numbers of patients on HD.

Conclusion

In this first validation study of CKD and RRT in UK primary care, prevalence of CKD in CPRD was similar to that in HSE, and prevalence of RRT was similar to that in UKRR across all age-sex groups, suggesting UK primary care data can be used to determine the prevalence of CKD and RRT.

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