NICE National Institute for Health and Care Excellence

Patients with CKD: characteristics and comorbidities

Analysis paper prepared by the North East Quality Observatory Service (NEQOS) as the National Collaborating Centre for Indicator Development for NICE Indicator development programme, April 2023

Purpose

The purpose of this short analysis paper is to provide a descriptive analysis of patients with CKD. Using anonymised data from GP practice disease registers in a sample of practices in the North East, it will describe the characteristics of those with CKD, including other disease registers on which they appear.

This analysis was carried out on records of patients aged 18 years and over registered at one of 19 GP practices from the North East of England. Thirty-one practices originally agreed to an anonymised data extraction to support the 'Frailty and age stratification' briefing paper, presented at the NICE IAC in December 2022, and were described as the 'NE sample'. They were subsequently contacted and 19 agreed to further use of the original data for this new purpose.

In this paper, they are collectively described as the 'reduced NE sample'. The reduced NE sample contained a total of 31,718 patients aged 18 years and over.

Characteristics of CKD patients

CKD patients by age

There were 5,375 patients in the reduced NE sample with CKD. 2,420 (45.0%) of these patients were aged 80 years and above, with the remaining 55% (2,955 patients) aged 79 or under. Table 1 shows more detail of CKD prevalence by age (as at 31st March 2022).

Table 1: Patients with CKD in reduced NE Sample by age group

Age group	Number of patients with CKD	% of total patients with CKD
<50	106	2.0%
50-54	61	1.1%
55-59	173	3.2%
60-64	262	4.9%
65-69	449	8.4%
70-74	836	15.6%
75-79	1,068	19.9%
80-84	1,027	19.1%
85-89	880	16.4%
90+	513	9.5%
Total	5,375	100%

Almost 24% of patients with CKD were recorded as having moderate or severe frailty, based on the primary care record, (14.7% of those aged under 80; 35.0% of those aged 80 years and over).

CKD patients by deprivation

Table 2 shows patients with CKD in the reduced NE Sample by national quintile of deprivation of their GP practice. As a result of the original requirements, the NE Sample contained only patients on disease registers, so the group of patients with hypertension and without any other of the diseases considered were selected as a comparator group assumed to have the least complexity, although it should be noted that this group may have diseases that were not included in the original requirements, such as atrial fibrillation or heart failure.

The data suggests that in comparison with patients on the hypertension register only in the reduced NE Sample, patients with CKD appear to live in more deprived areas, with 23.5% of patients with CKD living in the most deprived quintile, compared with 13.4% of those with hypertension (but without the other diseases included in the NE Sample).

Table 2: Patients with CKD in reduced NE Sample by deprivation of their GP practice, patients with hypertension and no other recorded disease for comparison

National quintile of deprivation of area of residence	Patients with CKD	Patients with CKD - %	Patients with hypertension, without the other diseases included	Patients with hypertension, without the other diseases included - %
1 – Most	1,265	23.5%	1,841	13.4%
2	1,709	31.8%	4,853	35.4%
3	1,156	21.5%	2,871	20.9%
4	1,008	18.8%	3,115	22.7%
5 – Least	237	4.4%	1,041	7.6%
Total	5,375	100%	13,721	100%

Comorbidities of CKD patients

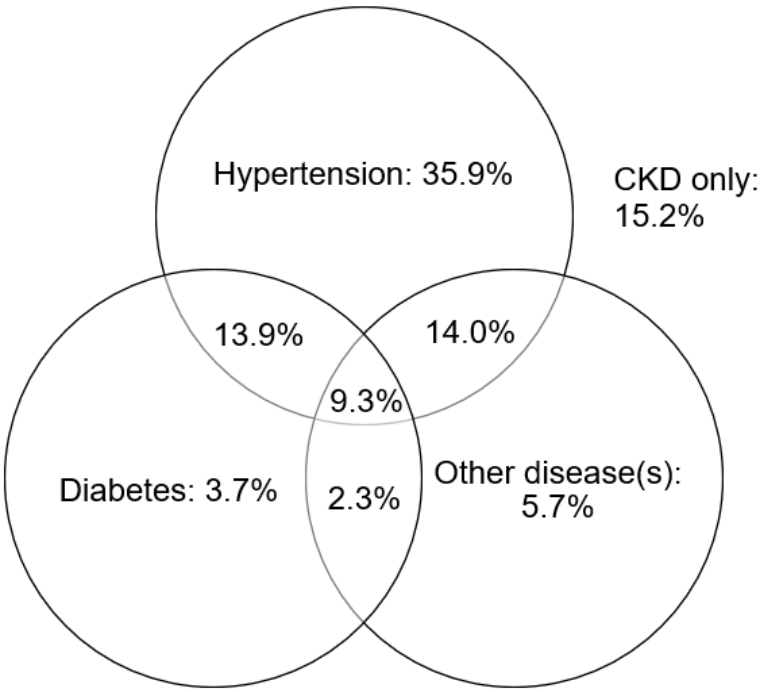
Of the 5,375 patients in the reduced NE Sample with CKD, and considering the additional diseases included (hypertension, diabetes, peripheral arterial disease, stroke or transient ischaemic attack and coronary heart disease):

- 818 (15.2%) had no additional diseases
- 2,400 (44.7%) had one additional disease
- 1,525 (28.4%) had two additional diseases
- 529 (9.8%) had 3 additional diseases
- 93 (1.7%) had 4 additional diseases
- 10 (0.2%) had 5 additional diseases: all of the additional diseases considered.

Figure 1 shows the patients with CKD and their comorbidities. It shows:

- Over 70% of patients with CKD also have hypertension; of those with CKD and hypertension, over half have at least one additional comorbidity.
- 29.2% of patients with CKD also have diabetes.
- 31.3% of patients with CKD have one or more of the other diseases considered.

Figure 1: Patients with CKD in reduced NE Sample and their comorbidities



Although heart failure is not included as part of this analysis (as it was not included in the original requirements) there is a known link between CKD and heart failure (see Heart Failure and CKD, National Kidney Foundation and Heart failure in patients with kidney disease, Tuegel C, Bansal N).

Prevalence of Comorbidity in the population

Using data taken from the Population and Person Insights Dashboard (Population and Person Insight (model.nhs.uk)) which is currently released as proof of concept, Table 3 shows the proportion of patients with CKD who also have one of these other conditions based on data as at 30th June 2021 (sorted in order of prevalence). These national figures support the findings from the reduced NE sample, where 73.2% of the CKD patients also had hypertension, and 29.2% also had diabetes.

Table 3: Patients with CKD by comorbid condition, national

Condition	Proportion of CKD patients who have comorbid condition
Hypertension	80%
Coronary Heart Disease	37%

Condition	Proportion of CKD patients who have comorbid condition
Diabetes	35%
Atrial fibrillation	27%
Heart Failure	23%
Cerebrovascular disease	19%
End Stage Renal Failure	19%
Peripheral Vascular Disease	18%
COPD	16%
Depression	16%
Intermediate frailty risk	13%
Dementia	11%
High frailty risk	10%
Severe Heart Failure	10%
Physical disability	6%
Severe COPD	4%

Data source, methods and limitations

There were over 171,000 patients aged 18 years and over registered at one of the 19 participating GP practices in the reduced NE Sample.

Data relating to these patients was extracted for NCCID by NECS in October 2022 once all appropriate governance and data sharing agreements were put in place. A set of clinical system queries was developed by NECS (based on a data specification produced by NCCID) to run in the participating practices to produce a data extraction, which was based on SNOMED codes and was available at pseudonymised patient level. The latest code in the patient record (ever) was extracted.

The extraction included fields containing the following:

- Patient age (limited to those aged 18 years and over),
- Frailty codes (taken from the GMS PMS Core Contract Data Collection Business Rules for 2021/22) to indicate those with a frailty assessment done, latest eFI or other frailty tool value recorded, and those who were mild, moderate or severely frail,

- Disease codes (taken from the QOF Business Rules for 2021/22) indicating inclusion on the diabetes, hypertension, CHD, PAD, STIA and CKD disease registers.

GP practice codes where patients were registered were obtained in order to calculate the Index of Multiple deprivation (IMD) decile for each GP practice.

The reduced NE sample is not representative of the general population, in particular, there are more large practices and fewer small practices than would be expected in a representative sample.