Prevalence of CKD Based on Estonian e-Health Data

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Background.

Estonian e-health is the foundation for registration and collection of healthcare data. At the same time, data analysis is often problematic, because the output documents are in different formats and this greatly complicates the analysis.

Aim. To study retrospectively the number of adult CKD patients and their distribution according to the CKD risk profile, analysing the data of the e-health information system and for the first time using the help of artificial intelligence.

Methods. The study based on a combined dataset from health insurance claims database, drug prescriptions database, and electronic health records in the Health Information System for a random sample of 10% of the Estonian population (Poisson method). The study population defined as all patients at least 18 years of age who had diagnosed with at least one disease that is a risk factor for CKD between 2016 and 2019 and/or had at least one recorded estimate of glomerular filtration rate (eGFR) and/or albumin-creatinine ratio (U-Alb/U-Crea) value during 2019. The number of medicines purchased by the patients, hospitalizations and/or emergency care cases observed. The help of artificial intelligence used to analyse the output documents in different formats, where the information in the summary text file transformed into the form used in the analysis.

Results. Based on the e-health data, we identified 5% of the population with an existing CKD diagnosis and in addition 2.4% potential G3-G5 CKD patients (all together 7.4%). eGFR values are available in the study for 52% of at-risk patients, while U-Alb/U-Crea values are available for only 12%. During the multi-morbidity assessment, we found that hypertension (79%), cardiovascular disease (CVD) (63%) and diabetes (28%) are most often present in patients diagnosed with CKD.

Conclusion. According to e-health data, the prevalence of CKD in the adult population in Estonia is 7.4% that is lower compared with other countries. Despite the existence of a national CKD treatment guideline and a CKD screening system for diabetes and hypertension, there are gaps in patient testing, CKD risk assessment, and evidence-based patient management. The prevention and treatment of CKD requires much more attention and resources.