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Title

Clusters of Long-Term Conditions and Adverse Health Outcomes in people with multimorbidity

Priority 1 (Research Category)

Multimorbidity

Presenters

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Abstract

Context: It is currently unclear how best to classify multimorbidity (presence of two or more long term conditions-LTCs) beyond the condition count.

Objectives: 1. To analyse how clusters of LTCs in relate to adverse health outcomes, including primary care use, number and duration of hospitalisations, and mortality in multimorbid patients.

2. To investigate additional information gained from using clusters over counts of LTCs in understanding the risk of adverse health outcomes.

Study Design and Analysis Latent Class Analysis was used to identify clusters of LTCs in four different age groups (18-36, 37-55, 56-73, >73) in three large community cohorts: UK Biobank, and the Secure Anonymised Information Linkage Databank (SAIL) and The UK Household Longitudinal Study (UKHLS). Incident rate ratios were computed for hospitalisations, primary care use, and all-cause mortality over a 10-year period, using negative binomial and poisson regression modelling.

Dataset and population studied: The UK Biobank cohort and the UKHLS cohorts were recruited from community in the UK. SAIL databank comprises anonymised routine primary care data for Wales covering approximately 70% of the Welsh population.

Results: Clustering LTCs using latent class analysis produced comparable clusters among all three databanks. In SAIL, the cluster with the highest IRR for mortality in was the “Pain+” cluster in the age group 18-36 years (IRR 4.47; 95% CI 3.85-5.17), closely followed by “Hypertension, Diabetes & Heart disease” in the age group 37-54 years (IRR 4.52; 95% CI: 4.28-4.77). In UKB, the cluster most strongly associated with mortality was the “Hypertension & Cardiometabolic” cluster in the age group 37-45 (IRR: 2.48; 95% CI: 1.19-5.12). The same clusters were also highly associated with hospitalisation events (SAIL 18-37 “Pain+”: IRR 1.84, 95% CI 1.80-1.88; SAIL 37-54 “Hypertension, Diabetes & Heart disease”:

IRR 1.53, 95% CI: 1.50-1.56); UK Biobank “Hypertension & Cardiometabolic”: IRR 2.30, 95% CI: 2.03-2.61).

Conclusions: Comparable clusters of multimorbidity emerged for different databases. We show that clusters were significantly associated with health-related outcomes even after accounting for LTC counts and that different clusters have distinct associations with health outcomes. Combinations of long-term conditions should be taken into account when caring for multimorbid patients.