

Heterogeneity in Multimorbidity and Dementia Trajectories in Old Age in Germany – A Study Based on Health Claims Data

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With the ageing of the world's population, there is increasing interest in understanding the occurrence of multiple diseases and the progression of multimorbidity over time. In this context, the number of people with dementia is expected to increase in the future, becoming a major public health problem, especially in ageing populations such as Germany. Indeed, little is known about pre- and post-dementia comorbidity trajectories in older age. This study aims to identify and compare different groups of multimorbidity trajectories in Germany, with special emphasis on trajectories involving dementia diagnosis.

We used German health claims data from 29,457 individuals aged 70-74 years in 2007. They were followed until the last quarter of 2019. Morbidity was assessed using the weighted Charlson Comorbidity Index. Based on this, 9 states were characterised: Low, medium, high and very high morbidity, dementia with low, medium, high and very high morbidity and death. State sequence analysis and hierarchical cluster analysis were used to identify clusters of multimorbidity trajectories. Demographic differences between the clusters were assessed using multinomial logistic regression, considering marginal means.

We identified seven clusters, with the large majority of individuals falling into the four clusters including most of the time varying degrees of morbidity (60.2%), followed by the cluster 'Rapid deterioration to death' (27.1%). 12.7% of the sequences belonged to clusters dominated by dementia with varying degrees of morbidity: the vast majority were in the cluster 'Transition to dementia with high to very high morbidity' (64.8%), followed by the cluster 'Transition to dementia with medium morbidity' (35.2%). Women were more likely to be in clusters with low to medium morbidity with and without a transition to dementia, whereas men were more likely to have a transition to very high morbidity or a rapid deterioration to death. Men and women did not differ significantly in the probability of having a transition to dementia with high to very high morbidity. With the exception

of the 'Transition to high morbidity' cluster, the probability of being in a morbidity cluster decreased with age. The clusters including a transition to dementia and a rapid deterioration to death showed an increase in the probability with age.

Despite the large heterogeneity in individual multimorbidity and dementia trajectories in old age, we were able to identify a limited number of distinct clusters with specific age and sex patterns. The next step is the comparison of clusters and their characteristics from different populations.