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Frequencies of pre-existing diseases with an increased risk of serious clinical course of COVID-19—An analysis of small-area risk profiles in the German population

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Abstract

Background

Since the end of January 2020 infections with the new SARS-CoV-2 virus have been notified daily in Germany. A large number of COVID-19 cases with serious complications and a high case fatality rate pose new challenges for the health care system. The aim of the present study was to estimate the number of individuals with a higher risk of a critical clinical course of COVID-19 on the level of administrative districts. These data should support regional Associations of Statutory Health Insurance Physicians (ASHIPs) by pandemic resource preparedness. Calculations were performed with the state of knowledge by March 23, 2020.

Methods

We used nationwide outpatient claims data from the year 2018 according to § 295 SGB V. The dataset contains information about age, sex and place of residence as well as provided services and diagnoses according to the ICD-10 classification. In addition, physician-related data such as physician specialties and location of physician's office are available. Population data on a district level were used to estimate the numbers of patients in the general German population. These data were obtained from the Regional Statistics Database in Germany.

According to the publications published until the middle of March there was an increased risk of critical clinical course in case of COVID-19 for patients with the following diseases: hypertension, heart failure, type 1 and 2 diabetes, COPD as well as primary and secondary immune deficiencies. We calculated initially the prevalence of the above mentioned chronic conditions in the SHI-population by region. In a next step, absolute numbers were estimated for the total German population. These calculations were performed separately for each disease and for patients with at least three pre-existing diseases. A disease was defined as prevalent if it was diagnosed in at least two quarters of 2018 with an additional modifier "confirmed" (a so-called M2Q criterion).

Results

Approximately 3.6% and 80.3% of the individuals in the age group 15–34 and >79 years in Germany had at least one pre-existing disease, respectively. The proportion of individuals with at least three pre-existing diseases ranged between 0.7% in the age group 35–59 years and 12.6% in the age group >79 years. In addition, there were considerable regional differences across ASHIPs and administrative districts.

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Conclusion

Individuals >79 years with at least three underlying chronic diseases are at highest risk of developing critical clinical course of COVID-19. In addition, individuals in the same age group with at least one pre-existing disease and in the age group 60–79 years with at least three pre-existing diseases are also at higher risk. Routine claims data from the outpatient health sector are suitable to provide useful information to support local pandemic preparedness in outpatient health care.

Keywords

COPD, COVID-19, diabetes mellitus, heart failure, high-risk-patients, hypertension, immunodeficient diseases, multimorbidity, SARS-CoV-2, pandemic preparedness

Citation

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