DIABETES surveillance

ROBERT KOCH INSTITUT

Mortality

Field of action 4: Reducing the burden and costs of disease

Adults

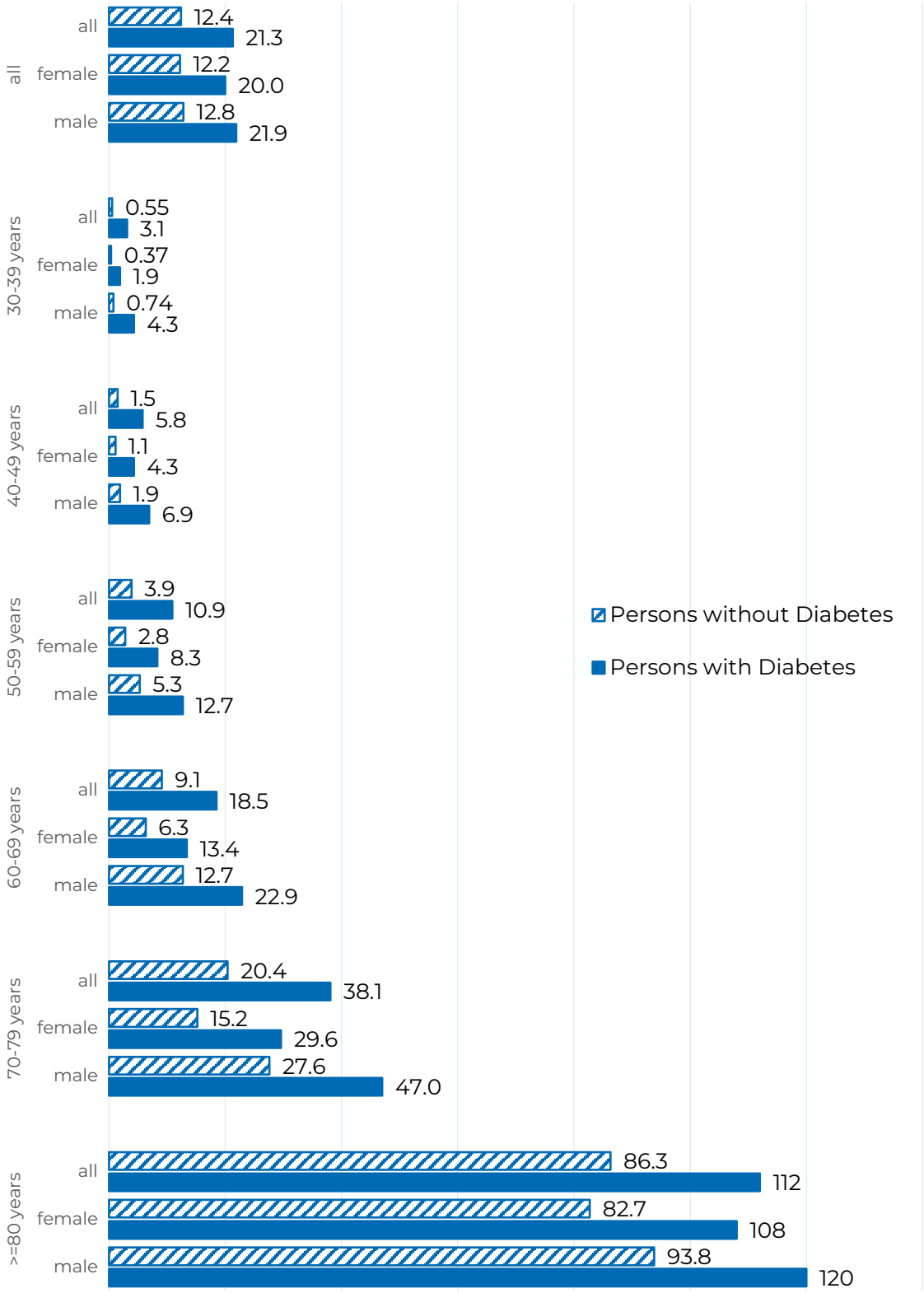
Background

One of the St. Vincent declaration goals is to align the lifespans of people with diabetes with those of people without diabetes [1]. Until now, estimates of excess mortality have either been based on a selective set of data or their low case numbers have prevented stratification by age and sex [2].

Key messages

- The age-standardised mortality rate per 1,000 persons aged 30 years and older is more than half higher for persons with diabetes than for persons without diabetes.
- Women and men with diabetes in Germany show a comparably increased mortality rate compared to women and men without diabetes.
- With increasing age, mortality rates equalized between the groups with and without diabetes.

Figure 1: Age-standardised mortality rate per 1,000 persons with and without diabetes (aged 30 years and older) by age and sex in 2014.



Results

Relative to 1,000 persons, the mortality rate in 2014 was 20.0 for women aged 30 years and older with diabetes and 21.9 for men aged 30 years and older with diabetes. Thus, the mortality rates per 1,000 persons are each significantly above the values for women aged 30 years and older without diabetes (12.2) and men aged 30 years and older without diabetes (12.8). With increasing age, there is a clear convergence of mortality rates between persons with and without diabetes. In the 30- to 39-year-old age group, the death rate per 1,000 persons is 3.1 in the group with diabetes and 0.55 in the group without diabetes, which is more than 5 times higher in the group with diabetes. The relative gap of mortality rates reduces in the age group of 50-59 years, it is 10.9 in the group with diabetes and 3.9 in the group without diabetes, being still 2.8 times higher in the group with diabetes. Finally, the mortality rate per 1,000 persons in the age group 80 years and older is 112 in persons with diabetes and 86.3 in persons without diabetes, thus reducing the relative gap in mortality rates between the two groups to a 1.3-fold increase in mortality.

Conclusion

In 2014, the mortality rate for people with diabetes aged 30 and older is higher by more than half than for those without diabetes. These results are consistent with findings from population-based analyses for Germany [3, 4]. These previous analyses and international studies [5] are also consistent in showing that the mortality rates of people with and without diabetes converge at an advanced age when most deaths occur. This confirmation of the Data Transparency Ordinance (DaTraV) data results opens up the prospect of using this data basis for regionalised analyses and for observing the development of excess mortality over time.

Methodology and data sources

Definition

The indicator mortality is defined as the mortality rate for people with documented diabetes and people without documented diabetes, respectively, as the quotient of the number of deaths in relation to the number of people in the respective population group at risk in one year.

Reference population

Adults aged 30 years and over with and without documented diabetes (in accordance with the definition of the indicator “prevalence of documented diabetes”) who have statutory health insurance are included in the analysis.

Data source

Claims data from approximately all of the 70 million people with statutory health insurance collected in accordance with the DaTraV data. Around 47 million are at least 30 years old, approximately 6.5 million had documented diabetes in 2013 and around 770,000 died in 2014.

Calculation

- **Observed relative values:** The quotient of the number of deaths in relation to 1,000 people with statutory health insurance.
- **Observed absolute values:** Number of persons covered by statutory health insurance with documented diabetes and aged 30 years or over who deceased in 2014.

Data quality

DaTraV data are claims data on all people covered by statutory health insurance. DaTraV data include documented outpatient and inpatient diagnoses as well as information on prescribed medications. The quality of claims data from SHI depends on conduct of documentation. DaTraV data do not cover people insured by private health insurance and do not provide information on inpatient or outpatient care.

Data download

Robert Koch Institute. (2024). Results of the National Diabetes Surveillance 2015 – 2024 [Data set]. Zenodo. https://doi.org/10.5281/zenodo.14935276 (in German)

References

1. World Health Organization (Europe), International Diabetes Federation (Europe). Diabetes Care and Research in Europe: The Saint Vincent Declaration. Diabet Med. 1990;7(4):360. Epub 1990/05/01. doi: 10.1111/j.1464-5491.1990.tb01405.x.
2. Heidemann C, Scheidt-Nave C. Prevalence, incidence and mortality of diabetes mellitus in adults in Germany – A review in the framework of the Diabetes Surveillance. J Health Monit. 2017;2(3):98-121. doi: 10.17886/RKI-GBE-2017-062.
3. Paprott R, Schaffrath Rosario A, Busch MA, Du Y, Thiele S, Scheidt-Nave C, et al. Association between hemoglobin A1c and all-cause mortality: results of the mortality follow-up of the German National Health Interview and Examination Survey 1998. Diabetes Care. 2015;38(2):249-56. Epub 2014/11/22. doi: 10.2337/dc14-1787.
4. Röckl S, Brinks R, Baumert J, Paprott R, Du Y, Heidemann C, et al. All-cause mortality in adults with and without type 2 diabetes: findings from the national health monitoring in Germany. BMJ Open Diabetes Res Care. 2017;5(1):e000451. doi: 10.1136/bmjdrc-2017-000451.
5. Tancredi M, Rosengren A, Svensson AM, Kosiborod M, Pivodic A, Gudbjornsdottir S, et al. Excess Mortality among Persons with Type 2 Diabetes. N Engl J Med. 2015;373(18):1720-32. Epub 2015/10/29. doi: 10.1056/NEJMoa1504347.

External links

- Federal Institute for Drugs and Medical Devices (BfArM). Information on the SHI health data by the health data lab. [cited 19.02.2025]. Available from: https://www.healthdatalab.de/data.
- Schmidt C, Reitzle L, Heidemann C, Paprott R, Ziese T, Scheidt-Nave C, et al. Excess mortality in adults with documented diabetes in Germany: routine data analysis of all insurance claims in Germany 2013–2014. BMJ Open. 2021;11(1):e041508. https://doi.org/10.1136/bmjopen-2020-041508

Imprint

Editor
Robert Koch Institute · Department of Epidemiology and Health Monitoring
National Diabetes Surveillance · Nordufer 20 · 13353 Berlin

Citation
National Diabetes Surveillance at the Robert Koch Institute (2024)
Results of the Diabetes Surveillance 2015 – 2024. Mortality – Adults.
Robert Koch Institute, Berlin. doi: 10.25646/12401.

Funding
The project Developing National Diabetes Surveillance at the Robert Koch Institute with expansion to an NCD Surveillance (2015 – 2024) was funded by the Federal Ministry of Health (funding references: GE20150323, GE20190305, 2522DIA700, 2523DIA002).

Supported by:

on the basis of a decision
by the German Bundestag