**SUPPLEMENTARY MATERIAL**

**Incidence of Early-onset Type 2 Diabetes and Sociodemographic Predictors of Complications: A Nationwide Registry Study**

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**SUPPLEMENTARY METHODS**

For this study, we used the Danish population-wide registers, which contain information on various aspects of life, including healthcare (1). All register data are linkable through the unique person ID assigned to every resident in Denmark (2). In the present study, we used the Danish Diabetes Register (DMreg 2020) (3) at Steno Diabetes Center Copenhagen to define diabetes. Information on the Danish Diabetes Register, including which registers it employs, can be found below.

The Danish Diabetes Register at Steno Diabetes Center Copenhagen

In Denmark, no single register encompasses data on diabetes. To capture as many individuals with diabetes as possible, using all available sources, a diabetes register was created based on information from five existing healthcare registers. The register was not created for this study. Individuals with diabetes were defined by one of the following inclusion criteria:

1. Earliest date of diabetes diagnosis (ICD-8: 249, 250; ICD-10: E10, E11 - these exclude gestational diabetes) in the National Patient Register (NPR) (valid from 1977) (4).
2. Earliest date of billing for podiatry in the Danish National Health Service Register (valid from 1990) (5).
3. Earliest date of purchase of any anti-diabetic medication (ATC A10xxx) in the Danish National Prescription Registry (valid from 1995) (6).
4. Earliest mentioned date of diagnosis in the Danish Adult Diabetes Registry (Valid from 2005) (7).
5. Earliest date of eye examination in the Danish Registry of Diabetic Retinopathy (diaBase) (Valid from 2009) (8).

In Denmark, individuals diagnosed with type 1 diabetes receive treatment in hospital outpatient clinics, while those with type 2 diabetes are primarily treated in General Practice. Approximately 20% of individuals with type 2 diabetes, experiencing severe complications, challenges with insulin therapy, or those who are considered in need of diabetes education, are referred for treatment in hospital outpatient clinics. Though individuals with type 2 diabetes may be admitted to the hospital for other reasons and then receive their diabetes diagnosis as a secondary diagnosis, a significant portion of individuals with type 2 diabetes lack ICD-10 codes. To address this gap, diabetes-defining information is gathered from other sources in the Danish Diabetes Register.

**Supplementary Table 1.** ICD-10 codes, Danish procedure codes, and NPU codes that make up diabetes complications\*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Disease** | **Definition** | **ICD-10** | **Procedures codes** | **NPU-codes** |
| **Non-fatal Cardiovascular Disease (CVD)** | Disorders of the heart and blood vessels with a non-fatal outcome |  |  |  |
| Atrial fibrillation | Frequent arrhythmia of the heartbeat | I48 | KFPD00, KFPD96 |  |
| Heart failure | When the heart muscle’s ability to pump blood is insufficient | I110, I50 |  |  |
| Hypertensive disease | When the pressure within the arteries is higher than normal | I10, I11, I12, I13, I15 |  |  |
| Non-MI Ischemic heart disease | When the coronary arteries are insufficiently supplied with blood | I20, I25 |  |  |
| Myocardial infarction | When a coronary artery or one of its branches gets blocked, preventing blood flow in the heart muscle | I21, I23, I24 | KFNA00, KFNA10, KFNA20, KFNA96, KFNB00, KFNB20, KFNB96, KFNC10, KFNC20, KFNC30, KFNC40, KFNC50, KFNC60, KFNC96, KFND10, KFND20, KFND96, KFNE00, KFNE10, KFNE20, KFNE96, KFNF00, KFNF10, KFNF20, KFNF30, KFNF96, KFNG00, KFNG00A, KFNG00B, KFNG00C, KFNG02, KFNG02A, KFNG05, KFNG05A, KFNG10, KFNG12, KFNG30, KFNG40, KFNG96 |  |
| Cerebrovascular disease | When the brain’s vessels are blocked or ruptured, leading to blocked blood flow or hemorrhage in the brain | I60, I61, I63, I64, G45 |  |  |
| Macrovascular atherosclerotic disease | Stenosis of the larger blood vessels in the body, obstructing blood flow | I70, I71, I739A, I739C |  |  |
| **Fatal CVD** | Disorders of the heart and blood vessels with a fatal outcome |  |  |  |
| Atrial fibrillation |  | I48 |  |  |
| Heart failure |  | I110, I50 |  |  |
| Hypertensive disease |  | I10, I11, I12, I13, I15 |  |  |
| Non-MI Ischemic heart disease |  | I20, I25 |  |  |
| Myocardial infarction |  | I21, I23, I24 |  |  |
| Cerebrovascular disease |  | I60, I61, I63, I64, G45 |  |  |
| Macrovascular atherosclerotic disease |  | I70, I71, I739A, I739C |  |  |
| **Nephropathy \*** | A gradual decrease in the kidneys’ filtration function measured in GFR |  |  |  |
| End-stage chronic kidney disease (CDK) | Failure of the kidneys’ function, dialysis, or transplant is necessary for survival, GFR less than 15 ml/min | N185 | BJFD, BJFZ, KJAK10, KJAK11, KJAK13, KJAK14, KKAS00, KKAS10, KKAS20, KKAS40, KKAS41, KKAS50, KKAS60, KKAS61, KKAS70, KKAS96, KKAS97, KPBL10, KPBL10A, KPBL20, KPBL20A, KPBL30, KPBL30A, KPBL99 | DNK35131 DNK35301 DNK35302 DNK35303 |
| Severe CKD | Severe reduction of the kidneys’ function, GFR 15-29 ml/min | N184 |  | DNK35131 DNK35301 DNK35302 DNK35303 |
| Moderate CKD | Moderate reduction of the kidneys’ function, GFR 30-59 ml/min | N183, N189 |  | DNK35131 DNK35301 DNK35302 DNK35303 |
| **Retinopathy** | Disease in the small retinal blood vessels, which if untreated causes visual impairment or blindness | H33, H352, H360, H368D, H420, H43 | BCDE, KCKB00, KCKB10, KCKB99, KCKC, KCKD, KCKE |  |
| **Amputation** | Surgical removal of a limb or other body part |  |  |  |
| Upper amputation | Removal of one or both lower extremities above the knee | Z896, Z896A, Z897 | KNFQ09, KNFQ19, KNFQ99 |  |
| Medium amputation | Removal of the lower extremity at or below the knee | Z895, Z895A, Z895B | KNGQ09, KNGQ19, KNGQ99 |  |
| Minor amputation | Removal of foot and ankle | Z894, Z894A | KNHQ00, KNHQ01, KNHQ02, KNHQ03, KNHQ05, KNHQ06, KNHQ07, KNHQ08, KNHQ10-17 KNHQ99 |  |

\* Diagnoses of end-stage, severe and moderate nephropathy are based on NPU-codes and defined as two measurements of eGFR below 15, 30, and 60, respectively, with at least a 60-day interval. The second measurement beyond the threshold, defines the date of diagnosis.

**Supplementary Table 2.** ICD-8 and ICD-10 codes that make up severe mental illness

|  |  |  |
| --- | --- | --- |
| **Disease** | **ICD-8** | **ICD-10** |
| Depression (including depression and other mood disorders). | 296.09, 296.29, 298.09, 300.49 | F32-F33 |
| Bipolar disorder | 296.19, 296.39, 298.19 | F30-F31 |
| Schizophrenia (including schizophrenia and schizophrenia spectrum disorder) | 295.x9, 296.89, 297.x9, 298.29– 298.99, 299.04, 299.05, 299.09, 301.83 | F20-F29 |

**Supplementary Table 3.** Crude incidence rates (IRs; per 1000 person-years) and adjusted incidence rate ratios (IRRs)\* for CVD, nephropathy, retinopathy, and amputation by comorbid and sociodemographic factors among individuals diagnosed with early-onset type 2 diabetes (18-45 years)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **CVD** | | | | **Nephropathy** | | | | **Retinopathy** | | | | **Amputation** | | | |
|  | **Women** | | **Men** | | **Women** | | **Men** | | **Women** | | **Men** | | **Women** | | **Men** | |
|  | 4837 events / 178815.7 PY | | 6485 events / 214894.1 PY | | 1802 events / 210568.9 PY | | 2254 events / 257564.8 PY | | 916 events / 213183.6 PY | | 1658 events /  256564.4 PY | | 181 events /  217963.2 | | 624 events / 264442.8 | |
|  | **IR**  **(95% CI)** | **IRR**  **(95% CI)\*** | **IR**  **(95% CI)** | **IRR**  **(95% CI)\*** | **IR**  **(95% CI)** | **IRR**  **(95% CI)\*** | **IR**  **(95% CI)** | **IRR**  **(95% CI)\*** | **IR**  **(95% CI)** | **IRR**  **(95% CI)\*** | **IR**  **(95% CI)** | **IRR (95% CI)\*** | **IR**  **(95% CI)** | **IRR (95% CI)\*** | **IR**  **(95% CI)** | **IRR (95% CI)\*** |
| **Overall** | 27.05 (26.3 - 27.82) |  | 30.18 (29.45 - 30.92) |  | 8.56 (8.17 - 8.96) |  | 8.75 (8.4 - 9.12) |  | 4.3 (4.03 -  4.58) |  | 6.46 (6.16 - 6.78) |  | 0.83 (0.72 -  0.96) |  | 2.36 (2.18 - 2.55) |  |
| **Education level** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Low | 29.36 (28.23 - 30.54) | Ref. | 31.12 (30.01 - 32.27) | Ref. | 9.84 (9.24 -  10.47) | Ref. | 9.48 (8.92 -  10.07) | Ref. | 4.44 (4.05 -  4.86) | Ref. | 6.35 (5.9 - 6.84) | Ref. | 0.96 (0.79 -  1.17) | Ref. | 2.71 (2.42 -  3.03) | Ref. |
| Medium | 25.91 (24.65 - 27.23) | 0.85 (0.8 -  0.91) | 31.87 (30.69 - 33.08) | 0.93 (0.88 - 0.98) | 7.88 (7.25-  8.56) | 0.77 (0.69 -  0.85) | 8.97 (8.41 -  9.56) | 0.82 (0.75 -  0.89) | 4.1 (3.66 -  4.6) | 0.94 (0.81 -  1.09) | 7.04 (6.55 -  7.57) | 0.99 (0.9 -  1.1) | 0.65 (0.49 -  0.86) | 0.69 (0.49 -  0.97) | 2.3 (2.03 -  2.61) | 0.71 (0.6 -  0.84) |
| High | 23.92 (21.52 - 26.57) | 0.73 (0.65 - 0.82) | 24.84 (22.35 - 27.61) | 0.73 (0.65 - 0.81) | 7.24 (6.07 -  8.64) | 0.62 (0.51 -  0.75) | 6.48 (5.36 -  7.83) | 0.57 (0.47 -  0.7) | 4.89 (3.95 -  6.07) | 0.98 (0.78 -  1.24) | 6.26 (5.16 -  7.6) | 0.88 (0.71 -  1.08) | 0.98 (0.61 -  1.57) | 0.87 (0.52 -  1.46) | 1.36 (0.9 -  2.04) | 0.4 (0.26 -  0.62) |
| **Income quintiles** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 (lowest) | 29.77 (28.17 - 31.46) | Ref. | 30.35 (28.9 -31.87) | Ref. | 8.06 (7.13 – 8.88) | Ref. | 8.87 (8.17 -  9.64) | Ref. | 4.86 (4.29 -  5.5) | Ref. | 6.9 (6.28 -  7.59) | Ref. | 0.84 (0.62 -  1.13) | Ref. | 2.17 (1.84 -  2.56) | Ref. |
| 2 | 29.26 (27.65 -30.95) | 0.94 (0.87-  1.01) | 30.44 (28.92 - 32.05) | 0.96 (0.89 - 1.03) | 9.42 (8.6 – 10.32) | 1.14 (1 -  1.3) | 9.26 (8.51 -  10.09) | 0.99 (0.87 -  1.11) | 4.64 (4.08 -  5.28) | 0.93 (0.78 -  1.11) | 5.93 (5.33 -  6.6) | 0.81 (0.71 -  0.94) | 0.92 (0.69 -  1.23) | 1.1 (0.73 -  1.66) | 2.66 (2.27 -  3.11) | 1.15 (0.91 -  1.44) |
| 3 | 25.81 (24.23 - 27.49) | 0.81 (0.75 - 0.88) | 29.89 (28.31 - 31.56) | 0.94 (0.87 - 1.01) | 8.59 (7.76 – 9.5) | 1 (0.87 -  1.15) | 8.92 (8.14 -  9.77) | 0.91 (0.81 -  1.03) | 3.58 (3.07 -  4.18) | 0.72 (0.59 -  0.87) | 6.13 (5.49 -  6.84) | 0.83 (0.72 -  0.96) | 0.73 (0.52 -  1.03) | 0.87 (0.56 -  1.37) | 2.71 (2.3 -  3.19) | 1.16 (0.92 -  1.47) |
| 4 | 24.11 (22.38 - 25.98) | 0.74 (0.68 - 0.82) | 30.33 (28.53 - 32.25) | 0.91 (0.84 - 0.99) | 8.04 (7.13 – 9.06) | 0.89 (0.77 -  1.04) | 8.08 (7.25 -  9) | 0.77 (0.67 -  0.88) | 4.14 (3.51 -  4.89) | 0.81 (0.65 -  0.99) | 6.56 (5.82 -  7.4) | 0.85 (0.73 -  0.99) | 0.75 (0.51 -  1.1) | 0.87 (0.53 -  1.41) | 1.98 (1.6 -  2.45) | 0.77 (0.59 -  1.01) |
| 5 | 23.01 (20.81- 25.43) | 0.69 (0.61 - 0.77) | 29.35 (27.1 - 31.79) | 0.85 (0.78 - 0.94) | 8.75 (7.51 – 10.19) | 0.94 (0.78 -  1.12) | 7.78 (6.76 -  8.96) | 0.71 (0.6 -  0.84) | 3.85 (3.07 -  4.84) | 0.74 (0.57 -  0.96) | 6.16 (5.26 -  7.21) | 0.77 (0.64 -  0.93) | 1.02 (0.66 -  1.59) | 1.17 (0.69 -  1.99) | 1.8 (1.34 -  2.4) | 0.66 (0.48 -  0.93) |
| **Employment** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Employed/Studying | 24.14 (23.2 - 25.12) | Ref. | 29.99 (29.11 - 30.9) | Ref. | 7.33 (6.86 -  7.84) | Ref. | 8.09 (7.68 -  8.52) | Ref. | 4.01 (3.67 -  4.39) | Ref. | 6.64 (6.27- 7.04) | Ref. | 0.71 (0.58 -  0.88) | Ref. | 2.33 (2.12 -  2.57) | Ref. |
| Not employed | 30.86 (29.65 - 32.12) | 1.28 (1.21 - 1.35) | 30.66 (29.4 - 31.97) | 1.06 (1 -  1.11) | 10.11 (9.49 -  10.78) | 1.42 (1.3 -  1.56) | 10.14 (9.48 -  10.84) | 1.39 (1.27 -  1.51) | 4.66 (4.24 -  5.11) | 1.12 (0.98 -  1.28) | 6.11 (5.6 -  6.66) | 0.98 (0.88 -  1.09) | 0.98 (0.8 -  1.2) | 1.29 (0.96 -  1.73) | 2.42 (2.11 -  2.77) | 1.15 (0.97 -  1.35) |
| **Marital status** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Married/Partnership | 27.09 (26.09 - 28.13) | Ref. | 30.33 (29.3 -31.4) | Ref. | 7.47 (7 - 7.98) | Ref. | 8.06 (7.58 -  8.57) | Ref. | 4.5 (4.14 -  4.9) | Ref. | 6.63 (6.2 -  7.09) | Ref. | 0.71 (0.58 -  0.87) | Ref. | 1.84 (1.62 -  2.08) | Ref. |
| Divorced/widowed | 31.31 (29.2 - 33.57) | 1.15 (1.06 - 1.24) | 33.67 (31.2 - 36.34) | 1.13 (1.04 - 1.23) | 10.39 (9.3 -  11.61) | 1.43 (1.25 -  1.62) | 10.52 (9.29 -  11.91) | 1.39 (1.21 -  1.6) | 3.85 (3.22 -  4.61) | 0.9 (0.74 -  1.1) | 5.42 (4.56 -  6.44) | 0.9 (0.75 -  1.09) | 0.99 (0.69 -  1.4) | 1.49 (0.99 -  2.24) | 2.66 (2.09 -  3.39) | 1.63 (1.24 -  2.15) |
| Single | 24.87 (23.56 - 26.26) | 1.09 (1.02 - 1.17) | 29.23 (28.14 - 30.37) | 1.1 (1.04 -  1.16) | 9.7 (8.94 -  10.52) | 1.78 (1.6 -  1.98) | 9.12 (8.56 -  9.71) | 1.45 (1.32 -  1.59) | 4.1 (3.62 -  4.64) | 1.06 (0.9 -  1.23) | 6.49 (6.02  6.99 | 1.11 (1 -  1.23) | 0.99 (0.78 -  1.28) | 1.8 (1.29 -  2.52) | 2.93 (2.63 -  3.27) | 2.07 (1.75 -  2.46) |
| **Region of residence** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Capital Region of Denmark | 26.32 (25.01 - 27.69) | Ref. | 30.65 (29.33 - 32.03) | Ref. | 9.04 (8.34 -  9.8) | Ref. | 9.72 (9.05 -  10.45) | Ref. | 4.47 (3.99 -  5.01) | Ref. | 6.3 (5.77 -  6.89) | Ref. | 0.88 (0.68 -  1.13) | Ref. | 2.2 (1.9 -  2.56) | Ref. |
| Central Denmark Region | 22.39 (20.92 - 23.96) | 0.85 (0.79 - 0.93) | 27.07 (25.58 - 28.65) | 0.89 (0.83 - 0.96) | 4.02 (3.47 -  4.66) | 0.43 (0.36 -  0.51) | 5.25 (4.67 -  5.9) | 0.53 (0.46 -  0.61) | 4.05 (3.5 -  4.7) | 0.92 (0.76 -  1.11) | 6.3 (5.65-  7.02) | 1.03 (0.89 -  1.18) | 0.65 (0.45 -  0.94) | 0.76 (0.49 -  1.18) | 2.42 (2.04 -  2.87) | 1.14 (0.91 -  1.42) |
| North Denmark Region | 22.45 (20.35 - 24.76) | 0.85 (0.76 - 0.95) | 26.92 (24.86 - 29.15) | 0.89 (0.82 - 0.98) | 11.57 (10.17 -  13.15) | 1.27 (1.09 -  1.48) | 9.13 (8.05 -  10.36) | 0.95 (0.82 -  1.1) | 4.6 (3.76 -  5.62) | 1.01 (0.8 -  1.27) | 6.91 (5.97 -  7.99) | 1.12 (0.95 -  1.33) | 0.56 (0.32 -  0.99) | 0.62 (0.33 -  1.14) | 2.05 (1.58 -  2.66) | 0.95 (0.7 -  1.29) |
| Region of Southern Denmark | 33.24 (31.4 - 35.18) | 1.28 (1.19 - 1.38) | 32.57 (30.93 - 34.29) | 1.09 (1.02 - 1.17) | 10.45 (9.53 -  11.45) | 1.14 (1.01 -  1.29) | 9.62 (8.82 -  10.49) | 1 (0.9 -  1.12) | 4.18 (3.62 -  4.83) | 0.94 (0.78 -  1.12) | 5.73 (5.12 -  6.41) | 0.94 (0.82 -  1.09) | 0.91 (0.67 -  1.23) | 1.04 (0.7 -  1.54) | 2.4 (2.02 -  2.85) | 1.14 (0.91 -  1.43) |
| Region Zealand | 29.72 (27.8 - 31.78) | 1.13 (1.04 - 1.23) | 31.37 (29.55 - 33.3) | 1.03 (0.95 - 1.11) | 9.06 (8.11 -  10.12) | 0.97 (0.85 -  1.11) | 9.92 (9.01 -  10.93) | 1.01 (0.89 -  1.14) | 4.1 (3.48 -  4.84) | 0.89 (0.73 -  1.08) | 6.78 (6.03 -  7.62) | 1.1 (0.95 -  1.27) | 0.96 (0.68 -  1.34) | 1.04 (0.68 -  1.58) | 2.52 (2.08 -  3.04) | 1.15 (0.91 -  1.46) |
| **Region of origin** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Denmark | 26.74 (25.89 - 27.61) | Ref. | 31.43 (30.59 - 32.29) | Ref. | 9.38 (8.92 -  9.86) | Ref. | 9.4 (8.98 -  9.83) | Ref. | 4.06 (3.76 -  4.38) | Ref. | 6.21 (5.88 -  6.57) | Ref. | 0.97 (0.83 -  1.13) | Ref. | 2.73 (2.52 -  2.97) | Ref. |
| African Region | 28.58 (20.71 - 39.45) | 1.13 (0.82 - 1.56) | 17.8 (12.59 - 25.17) | 0.59 (0.41 - 0.83) | 8.04 (4.57 -  14.16) | 0.98 (0.55 -  1.72) | 11.11 (7.32 -  16.88) | 1.35 (0.89 -  2.05) | 3.92 (1.76 -  8.72) | 1.13 (0.5 -  2.52) | 7.05 (4.17 -  11.9) | 1.21 (0.71 -  2.04) | - | - | - | - |
| Eastern Mediterranean Region | 28.42 (25.9 - 31.19) | 1.08 (0.97 - 1.19) | 26.47 (24.37 - 28.75) | 0.86 (0.78 - 0.93) | 5.27 (4.33 -  6.41) | 0.55 (0.45 -  0.67) | 5.77 (4.9 -  6.8) | 0.63 (0.53 -  0.74) | 5.31 (4.36 -  6.46) | 1.32 (1.07 -  1.62) | 7.43 (6.43 -  8.59) | 1.22 (1.04 -  1.42) | 0.31 (0.14 -  0.69) | 0.32 (0.14 -  0.71) | 0.78 (0.51 -  1.21) | 0.29 (0.18 -  0.45) |
| European Region | 31.18 (28.42 - 34.2) | 1.15 (1.04 - 1.27) | 26.39 (23.96 - 29.08) | 0.87 (0.79 - 0.97) | 6.34 (5.26 -  7.64) | 0.64 (0.53 -  0.78) | 6.32 (5.26 -  7.59) | 0.71 (0.58 -  0.85) | 5.68 (4.67 -  6.92) | 1.42 (1.15 -  1.75) | 6.73 (5.63 -  8.05) | 1.23 (1.02 -  1.48) | 0.56 (0.3 -  1.03) | 0.57 (0.3 -  1.08) | 1.63 (1.14 -  2.33) | 0.68 (0.47 -  0.99) |
| Region of the Americas | 17.95 (10.42 - 30.91) | 0.81 (0.47 - 1.39) | 13.96 (5.81 - 33.53) | 0.51 (0.21 - 1.22) | 5.05 (1.89 -  13.44) | 0.71 (0.27 -  1.91) | 9.53 (3.58 -  25.39) | 1.3 (0.49 -  3.47) | 5.06 (1.9 -  13.48) | 1.91 (0.71 -  5.1) | 7.07 (2.28 -  21.91) | 1.62 (0.52 -  5.03) | 1.24 (0.17 -  8.81) | 2.17 (0.3 -  15.53) | - | - |
| South-East Asia Region | 21.89 (18.09 - 26.48) | 0.83 (0.69 - 1.01) | 25.28 (21.57 - 29.64) | 0.82  (0.7 - 0.96) | 4.63 (3.15 -  6.8) | 0.48 (0.33 -  0.71) | 5.11 (3.69 -  7.09) | 0.55 (0.4 -  0.77) | 2.64 (1.59 -  4.38) | 0.68 (0.41 -  1.13) | 8.7 (6.74 -  11.23) | 1.39 (1.07 -  1.8) | - | - | 0.42 (0.13 -  1.29) | 0.15 (0.05 -  0.46) |
| Western Pacific Region | 21.23 (15.9 - 28.34) | 0.82 (0.61 - 1.09) | 18.92 (13.06 - 27.4) | 0.60  (0.41 -  0.87) | 3.27 (1.64 -  6.53) | 0.34 (0.17 -  0.69) | 9.74 (5.97 -  15.9) | 1.04 (0.63 -  1.7) | 5.81 (3.44 -  9.81) | 1.6 (0.94 -  2.71) | 8.72 (5.16 -  14.72) | 1.6 (0.94 -  2.71) | - | - | 0.59 (0.08 -  4.16) | 0.24 (0.03 -  1.71) |
| **Physical comorbidity (CCI)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| None | 26.32 (25.52 - 27.14) | Ref. | 29.96 (29.18 - 30.75) | Ref. | 7.95 (7.55 -  8.38) | Ref. | 8.1 (7.74 -  8.48) | Ref. | 4.37 (4.07 -  4.68) | Ref. | 6.59 (6.26 -  6.93) | Ref. | 0.76 (0.64 -  0.89) | Ref. | 2.31 (2.12 -  2.51) | Ref. |
| Any | 31.45 (29.35 - 33.7) | 1.21 (1.12 - 1.31) | 31.64 (29.63 - 33.78) | 1.08 (1.01 - 1.16) | 12.17 (10.99 -  13.48) | 1.63 (1.45 -  1.83) | 13.07 (11.9 -  14.35) | 1.77 (1.59 -  1.96) | 3.89 (3.26 -  4.64) | 0.97 (0.8 -  1.18) | 5.66 (4.92 -  6.51) | 0.92 (0.79 -  1.07) | 1.26 (0.92 -  1.71) | 1.91 (1.34 -  2.72) | 2.68 (2.2 -  3.28) | 1.29 (1.04 -  1.61) |
| **Severe mental illness (SMI)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| None | 26.19 (25.39 - 27.02) | Ref. | 30.01 (29.24 - 30.8) | Ref. | 8.38 (7.96 -  8.81) | Ref. | 8.6 (8.22 -  8.99) | Ref. | 4.48 (4.18 -  4.8) | Ref. | 6.78 (6.45 -  7.13) | Ref. | 0.83 (0.71 -  0.97) | Ref. | 2.39 (2.2 -  2.59) | Ref. |
| Any | 31.92 (29.85 - 34.13) | 1.29 (1.2 -  1.39) | 31.43 (29.32 - 33.69) | 1.11 (1.03 - 1.2) | 9.56 (8.54 -  10.69) | 1.26 (1.12 -  1.43) | 9.92 (8.86 -  11.11) | 1.3 (1.15 -  1.47) | 3.32 (2.75 -  4) | 0.8 (0.66 -  0.98) | 4.12 (3.46 -  4.91) | 0.66 (0.55 -  0.79) | 0.84 (0.58 -  1.22) | 1.14 (0.76 -  1.7) | 2.16 (1.7 -  2.74) | 1.05 (0.81 -  1.35) |

\*Adjusted IRRs from Poisson regression models adjusted for age, calendar year, and diabetes duration.

PY, person-years.

**Supplementary Figure 1. An overview of individuals and their transitions between states during follow-up stratified by sex. *A*: CVD. *B*: Nephropathy. *C*: Retinopathy. *D*: Amputation.**

The numbers on the arrows are the number of individuals (N, top) and transitions per 1000 person-years of follow-up (overall IR, bottom). The numbers in the boxes are person-years of follow-up (middle) and below the number of individuals who begin (N start, bottom left) and end (N end, bottom right), respectively, their follow-up in each of the states.

DM, Type 2 diabetes. CVD, Cardiovascular disease. Nefr, Nephropathy. Amp, Amputation.

|  |  |
| --- | --- |
| 1. **Nephropathy** 2. **CVD**   **Women** | **Men** |
| Et billede, der indeholder tekst, diagram, linje/række, Font/skrifttype  Automatisk genereret beskrivelse  **Women** | **Men** |
| 1. **Retinopathy**   Too few observations in the sample. | Too few observations in the sample. |
| Too few observations in the sample. |  |

**Women**

1. **Amputation**

**Men**

**Supplementary Figure 2. Diabetes-duration-specific incidence rates of CVD, nephropathy, retinopathy, and amputation per 1,000 person-years in individuals with early-onset type 2 diabetes, by different comorbidities and sociodemographic factors. Data are shown separately for women (left) and men (right). *A*: CVD. *B*: Nephropathy. *C*: Retinopathy. *D*: Amputation.**

Data are shown for individuals aged 40 years and diagnosed with diabetes in 2020. Only statistically significant interactions are shown. The vertical axis is on a log scale.The shaded areas indicate 95% confidence intervals.

PY, person-years.CVD, Cardiovascular disease. CCI, Charlson’s comorbidity index (physical comorbidities: any, or none).

|  |  |
| --- | --- |
| **Women** | **Men** |

**Women**

1. **CVD**
2. **Nephropathy**

|  |  |
| --- | --- |
|  | **Men** |
| **Women** | **Men** |

|  |  |
| --- | --- |
|  | **Men** |
| **Women** | **Men** |
|  | **Men** |

**Women**

1. **Retinopathy**

|  |  |
| --- | --- |
| 1. **Amputation** | **Men** |
|  | **Men** |

**Women**

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