**Appendix**

**Appendix Table 1: Baseline characteristics of participants with diabetes**

|  |  |  |
| --- | --- | --- |
| **Type 1 diabetes** | **With Townsend index (*n =* *3,601*)** | **Without Townsend index (*n = 805*)** |
| **Age (years), meanSD** | 17.1 | 16.89.5 |
| **Male sex, *n (%)*** | 2,116 (58.8) | 444 (55.2) |
| **Ethnicity, *n (%)*** |  |  |
| White | 1,619 (45.0) | 380 (47.2) |
| Mixed or Multiples | 13 (0.4) | 2 (0.2) |
| Other ethnic groups | 15 (0.4) | 8 (1.0) |
| Black, Black British, Black Welsh, Caribbean or African | 22 (0.6) | 8 (1.0) |
| Asian, Asian British, Asian Welsh | 37 (1.0) | 20 (2.5) |
| Missing | 1,895 (52.6) | 387 (48.1) |
| **Smoking Status, *n (%)*** |  |  |
| Smoker | 1,644 (45.7) | 376 (46.7) |
| Ex-smoker | 417 (11.6) | 89 (11.1) |
| Non-smoker | 210 (5.8) | 35 (4.3) |
| Missing | 1,330 (36.9) | 305 (37.9) |
| **HbA1c categories, *n (%)\**** |  |  |
| <6.5% | 505 (14.0) | 104 (12.9) |
| 6.5-7.5% | 776 (21.5) | 165 (20.5) |
| 7.5-8.5% | 720 (20.0) | 162 (20.1) |
| 8.5% | 962 (26.7) | 210 (26.1) |
| Missing | 638 (17.7) | 164 (20.4) |
| **Hypertension, *n (%)*** | 32 (0.9) | 9 (1.1) |
| **Chronic kidney disease, *n (%)*** | 43 (1.2) | 4 (0.5) |
| **Diabetic Foot Disease, *n (%)*** | 49 (1.4) | 11 (1.4) |
| **Metformin, *n (%)*** | 153 (4.2) | 48 (6.0) |
| **Lipid-lowering drugs, *n (%)*** | 89 (2.5) | 17 (2.1) |
|  |  |  |
| **Type 2 diabetes** | **With Townsend index (*n = 142,991*)** | **Without Townsend index (*n = 28,231*)** |
| **Age (years), meanSD** | 62.913.1 | 61.613.3 |
| **Age categories(years), *n (%)*** |  |  |
| 30 | 1,091 (0.8) | 242 (0.9) |
| 30-60 | 56,951 (39.8) | 12,541 (44.4) |
| >60 | 84,949 (59.4) | 15,448 (54.7) |
| **Male sex, *n (%)*** | 18,314 (59.3) | 17,044 (57.3) |
| **Ethnicity, *n (%)*** |  |  |
| White | 65,404 (45.7) | 13,025 (46.1) |
| Mixed or Multiples | 875 (0.6) | 362 (1.3) |
| Other ethnic groups | 318 (0.2) | 110 (0.4) |
| Black, Black British, Black Welsh, Caribbean or African | 1,841 (1.3) | 641 (2.3) |
| Asian, Asian British, Asian Welsh | 4,363 (3.1) | 1,411 (5.0) |
| Missing | 70,190 (49.1) | 12,682 (44.9) |
| **Smoking Status, *n (%)*** |  |  |
| Smoker | 191 (0.1) | 18 (0.1) |
| Ex-smoker | 23,302 (16.3) | 4,876 (17.3) |
| Non-smoker | 52,229 (36.5) | 9,679 (34.3) |
| Missing | 67,269 (47.0) | 13,658 (48.4) |
| **BMI (kg/m2), meanSD** | 31.6 | 31.9 |
| **BMI categories** |  |  |
| Underweight/Normal Weight (< 25) | 17,974 (12.6) | 3,506 (12.4) |
| Overweight (25 - 30) | 45,323 (31.7) | 8,689 (30.8) |
| Class 1 Obesity (30 - 35) | 41,049 (28.7) | 8,023 (28.4) |
| Class 2 Obesity (35 - 40) | 21,382 (15.0) | 4,331 (15.3) |
| Class 3 Obesity (≥ 40) | 14,837 (10.4) | 3,217 (11.4) |
| Missing | 2426 (1.7) | 465 (1.6) |
| **HbA1c categories, *n (%)\**** |  |  |
| 6.5% | 59,056 (41.3) | 11,322 (40.1) |
| 6.5 - 7.5% | 55,428 (38.8) | 10,852 (38.4) |
| 7.5 - 8.5% | 13,988 (9.8) | 2,896 (10.3) |
| > 8.5% | 11,473 (8.0) | 2,490 (8.8) |
| Missing | 3,046 (2.1) | 671 (2.4) |
| **Hypertension, *n (%)*** | 77,971 (54.5) | 14,927 (52.9) |
| **Peripheral vascular disease, *n (%)*** | 4,462 (3.1) | 690 (2.4) |
| **Stroke, *n (%)*** | 10,399 (7.3) | 1,826 (6.5) |
| **Ischemic heart disease, *n (%)*** | 24,619 (17.2) | 4,332 (15.3) |
| **Heart Failure, *n (%)*** | 5,129 (3.6) | 964 (3.4) |
| **Chronic kidney diseases, *n (%)*** | 24,429 (17.1) | 4,307 (15.3) |
| **Diabetic Foot Disease, *n (%)*** | 21,329 (14.9) | 3,459 (12.3) |
| **Insulin, *n (%)*** | 9,771 (6.8) | 1,975 (7.0) |
| **Metformin, *n (%)*** | 76,978 (53.8) | 16,050 (56.9) |
| **All other glucose-lowering drugs, *n (%)*** | 23,710 (16.6) | 4,521 (16.0) |
| **Lipid-lowering drugs, *n (%)*** | 104,603 (73.2) | 19,401 (68.7) |
| HbA1c, hemoglobin A1c. | | |

**Appendix Table 2: The incidence rate and hazard ratio of STDR in sensitivity analysis**

|  |  |  |
| --- | --- | --- |
| **Type 1 diabetes** | **With Townsend index** | **Without Townsend index** |
| **N** | 3,601 | 805 |
| **STDR,** n (%) | 73 | 16 |
| **Person-years** | 15,895.9 | 3,373 |
| **Incidence rate (per 1,000 person-years)** | 4.59 | 4.74 |
| **Crude hazard ratio (95% CI)** | Ref | 1.01 (0.59, 1.74) |
| **Adjusted hazard ratio (95% CI)** \* | Ref | 1.00 (0.58, 1.72) |
|  |  |  |
| **Type 2 diabetes** | **With Townsend index** | **Without Townsend index** |
| **N** | 142,991 | 28,231 |
| **STDR,** n (%) | 4,312 | 1,051 |
| **Person-years** | 626,666.1 | 128,179.6 |
| **Incidence rate (per 1,000 person-years)** | 6.88 | 8.2 |
| **Crude hazard ratio (95% CI)** | Ref | 1.18 (1.10, 1.26) |
| **Adjusted hazard ratio (95% CI)** † | Ref | 1.20 (1.12, 1.28) |
| STDR, sight-threatening diabetic retinopathy. \*Adjusted for age at index, sex, ethnicity, weight and height, HbA1c, smoking, hypertension, chronic kidney disease (stage 3 to 5), diabetic foot disease, glucose-lowering medicine, and lipid-lowering medicine. †Adjusted for age at index, sex, ethnicity, BMI, HbA1c, smoking, hypertension, peripheral vascular disease, ischemic heart disease stroke, heart failure, chronic kidney disease (stage 3 to 5), diabetic foot disease, glucose-lowering medicine, and lipid-lowering medicine. | | |

**Appendix Table 3: The incidence rate and hazard ratio of STDR**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Type 1 Diabetes** | **Townsend Deprivation Index** | | | | |
| **1 (lowest deprivation)** | **2** | **3** | **4** | **5 (highest deprivation)** |
| **Subgroup analysis** | **Adjusted hazard ratio (95% CI)** \* | | | | |
| **Age** |  |  |  |  |  |
| **<18 years old** | Ref | 1.02 (0.31, 3.30) | 2.02 (0.85, 4.81) | 5.6 (2.93, 10.69) | 3.47 (1.60, 7.53) |
| **>=18 years old** | Ref | 1.95 (0.48, 7.86) | 2.73 (0.75, 9.93) | 3.18 (0.87, 11.55) | 2.26 (0.58, 8.79) |
|  |  | | |  | |
| **Type 2 Diabetes** | **Townsend Deprivation Index** | | | | |
| **1 (lowest deprivation)** | **2** | **3** | **4** | **5 (highest deprivation)** |
| **Subgroup analysis** | **Adjusted hazard ratio (95% CI)** † | | | | |
| **Age** |  |  |  |  |  |
| **<65 years old** | Ref | 1.29 (1.13, 1.47) | 1.07 (0.93, 1.23) | 1.09 (0.95, 1.25) | 1.18 (1.03, 1.35) |
| **>=65 years old** | Ref | 1.27 (1.12, 1.44) | 0.97 (0.86, 1.11) | 1.06 (0.94, 1.2) | 1.12 (0.99, 1.28) |
| STDR, sight-threatening diabetic retinopathy. \*Adjusted for age at index, sex, ethnicity, weight and height, HbA1c, smoking, hypertension, chronic kidney disease (stage 3 to 5), diabetic foot disease, glucose-lowering medicine, and lipid-lowering medicine. †Adjusted for age at index, sex, ethnicity, BMI, HbA1c, smoking, hypertension, peripheral vascular disease, ischemic heart disease stroke, heart failure, chronic kidney disease (stage 3 to 5), diabetic foot disease, glucose-lowering medicine, and lipid-lowering medicine. | | | | | |