**Additional file 1:** Patients characteristics with and without HbA1.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Patients without HbA1  n:44730 | Patients with  HbA1  n:68535 | p-value |
| Mean age | Mean, sd | 61.5(9.2) | 62.6(8.7) | <0.001 |
| Evolution of DM2 (years) | Mean, sd | 9.33(5.7) | 9.43(5.9) | 0.006 |
| Sex (male) | n (%) | 27300(61.0) | 38955(56.8) | <0.001 |
| Foreigners |  | 3578 (8.0) | 4111(6.0) | <0.001 |
| Socioeconomic Status index: |  |  |  | <0.001 |
| 1 | n (%) | 11239 (25.3) | 14764 (21.6) |  |
| 2 | n (%) | 8415 (18.9) | 12405 (18.2) |  |
| 3 | n (%) | 8470 (19.0) | 13110 (19.2) |  |
| 4 | n (%) | 9004 (20.2) | 15393 (22.6) |  |
| 5 | n (%) | 7364 (16.6) | 12568 (18.4) |  |
| Cardiovascular Risk Factors: |  |  |  |  |
| Tobacco | n (%) | 1490 (18.6) | 4799 (18.0) | 0.20 |
| Dyslipidaemia | n (%) | 24474 (54.7) | 43135 (62.9) | <0.001 |
| Hypertension | n (%) | 26868 (60.1) | 43384 (63.3) | <0.001 |
| Obesity | n (%) | 6197(48.0) | 18407(46.1) | <0.001 |
| Clinical Parameters: |  |  |  |  |
| SBP (mmHg) | Mean, sd | 138.4 (18.0) | 139.5 (16.9) | <0.001 |
| DBP (mmHg) | Mean, sd | 79.2 (10.4) | 80.4 (10.0) | <0.001 |
| BMI (kg/m2) | Mean, sd | 30.4 (5.6) | 30.2 (5.2) | <0.001 |
| LDL (mg/dL) | Mean, sd | 104.0 (35.3) | 103.2 (32.7) | 0.22 |
| HDL (mg/dL) | Mean, sd | 48.0 (13.5) | 48.9 (12.9) | <0.001 |
| Estimated Glomerular Filtration, (mL/min/1,73 m2) | Median, IQR | 83.8 (63.2, 90.9) | 86.8 (70.0, 91.7) | <0.001 |
| Albuminuria (mg/g) | Mean, sd | 83.8 (63.2, 90.9) | 48.9 (310.3) | 0.005 |
| T2D Complications: |  |  |  |  |
| Coronary heart disease | n (%) | 5389 (12.0) | 7057 (10.3) | <0.001 |
| Stroke | n (%) | 2801 (6.3) | 3908 (5.7) | <0.001 |
| Peripheral Arteriopathy | n (%) | 2335 (5.2) | 3212 (4.7) | <0.001 |
| Renal Chronic Disease\* | n (%) | 69(14.1) | 1910(11.7) | 0.10 |
| Diabetic Nephropathy | n (%) | 105 (21.0) | 2232(14.5) | <0.001 |
| Retinopathy | n (%) | 1507 (3.4) | 2127 (3.1) | 0.013 |

SBP: Systolic blood pressure. DBP: Diastolic blood pressure, BMI: body mass index

\*The percentages and number of patients were made with patients who had at least two values of estimated glomerular filtration less than 60 mL/min/1,73 m2

**Additional file 2:** Male characteristics of patients by socioeconomic status index

\*: Total and %

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | All | Quintile 1  n:8861 | Quintile 2  n:7174 | Quintile 3  n:7333 | Quintile 4  n:8625 | Quintile 5  n:6800 | p-value |
| Cardiovascular Risk Factors |  |  |  |  |  |  |  |
| Tobacco\* | 3314 (21.8) | 700 (19.7) | 632 (21.2) | 594 (20.7) | 717 (21.4) | 664 (27.5) | <0.001 |
| Dyslipidaemia\* | 23689 (60.8) | 5511 (62.2) | 4116 (57.4) | 4594 (62.6) | 5137 (59.6) | 4233 (62.3) | <0.001 |
| Hypertension\* | 23511 (60.4) | 9570 (60.3) | 7306 (59.1) | 7560 (60.9) | 8145 (58.0) | 6464 (57.4) | <0.001 |
| Obesity\* | 9405 (51.09) | 1926 (41.7) | 1706(41.8) | 1675(40.6) | 2276 (45.0) | 1789(44.9) | <0.001 |
| Complications |  |  |  |  |  |  |  |
| Ischaemic heart disease\* | 5474 (14.1) | 1348 (15.2) | 964 (13.4) | 1030 (14.0) | 1210 (14.0) | 904 (13.3) | 0.004 |
| Stroke\* | 2479 (6.4)) | 613 (6.9) | 422 (5.9) | 436 (5.9) | 561 (6.5) | 439 (6.5) | 0.042 |
| Peripheral Arteriopathy\* | 2538 (6.5) | 548 (6.2) | 453 (6.3) | 493 (6.7) | 559 (6.5) | 473 (7.0) | 0.31 |
| Diabetic Nephropathy\* | 1564 (16.9) | 335 (17.2) | 264(15.9) | 291 (16.1) | 378 (16.2) | 292 (20.6) | 0.002 |
| Renal Chronic Disease\* | 1290 (3.3) | 1182 (23.0) | 338 (7.7) | 735 (16.5) | 372 (6.9) | 924 (20.2) | <0.001 |
| Retinopathy\* | 1298 (3.3) | 280 (3.2) | 237 (3.3) | 241 (3.3) | 242 (2.8) | 292 (4.3) | <0.001 |
| Optimal Control: |  |  |  |  |  |  |  |
| HbA1\* | 24307 (62.4) | 5758 (65.0) | 4589 (64.0) | 4603 (62.8) | 5230 (60.6) | 4010 (59.0) | <0.001 |
| HbA1, BP, LDL\* | 3099 (11.1) | 681 (11.1) | 617 (11.4) | 641 (12.3) | 442 (7.9) | 703 (13.4) | <0.001 |
| HbA1, BP, LDL, BMI\* | 1470 (7.5) | 326 (6.6) | 301 (6.5) | 286 (6.3) | 225 (4.2) | 327 (7.3) | <0.001 |

**Additional file 3:** Female characteristics of patients by socioeconomic status index

\*: Total and %

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | All | Quintile 1  n:5903 | Quintile 2  n:5231 | Quintile 3  n:5777 | Quintile 4  n:6768 | Quintile 5  n:5768 | p-value |
| Cardiovascular Risk Factors |  |  |  |  |  |  |  |
| Tobacco\* | 1485 (13.0) | 327 (13.8) | 294 (14.1) | 261 (11.5) | 317 (12.0) | 281 (13.6) | 0.027 |
| Dyslipidaemia\* | 19446 (65.7) | 3968 (67.2) | 3358 (64.2) | 3930 (68.0) | 4359 (64.4) | 3761 (65.2) | <0.001 |
| Hypertension\* | 19873 (67.2) | 3776 (64.0) | 3428 (65.5) | 3975 (68.8) | 4619 (68.2) | 3980 (69.0) | <0.001 |
| Obesity\* | 9002 (48.9) | 1532 (47.1) | 1494(47.9) | 1670(46.9) | 2290 (53.1) | 1986(53.4) | <0.001 |
| Complications |  |  |  |  |  |  |  |
| Ischaemic heart disease\* | 1583 (5.4) | 293 (5.0) | 273 (5.2) | 295 (5.1) | 383 (5.7) | 333 (5.8) | 0.21 |
| Stroke\* | 1429 (4.8) | 272 (4.6) | 257 (4.9) | 273 (4.7) | 322 (4.8) | 299 (5.2) | 0.65 |
| Peripheral Arteriopathy\* | 674 (2.3) | 135 (2.3) | 137 (2.6) | 130 (2.3) | 151 (2.2) | 115 (2.0) | 0.30 |
| Diabetic Nephropathy\* | 668 (10,7) | 114 (10.6) | 116(11.5) | 150 (10.7) | 159(9.3) | 127 (13.0) | 0.054 |
| Renal Chronic Disease\* | 833 (2.8) | 856 (22.8) | 296 (8.8) | 706 (18.6) | 397 (8.7) | 792 (19.0) | <0.001 |
| Retinopathy\* | 829 (2.8) | 138 (2.3) | 136 (2.6) | 153 (2.6) | 190 (2.8) | 206 (3.6) | <0.001 |
| Optimal Control |  |  |  |  |  |  |  |
| HbA1 | 18989 (64.2) | 3973 (67.3) | 3453 (66.0) | 3785 (65.5) | 4197 (62.0) | 3493 (60.6) | <0.001 |
| HbA1, BP, LDL | 2028 (9.2) | 404 (9.5) | 426 (10.4) | 412 (9.7) | 287 (6.3) | 487 (10.6) | <0.001 |
| EHbA1, BP, LDL, BMI\* | 896 (5.5) | 151 (4.2) | 187 (5.3) | 209 (5.2) | 129 (2.7) | 213 (5.1) | <0.001 |

**Additional file 4:** Distribution of characteristics according to glycaemic control.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Optimal glycaemic control  n:43296 | Suboptimal  glycaemic control  n:25239 | p-value |
| Mean age | Mean, sd | 63.2 (8.6) | 61.8 (9.1) | <0.001 |
| Evolution of T2D (years) | Mean, sd | 8.6 (5.6) | 10.9 (6.3) | <0.001 |
| Sex (male) | n (%) | 24307 (56.1) | 14648 (58.0) | <0.001 |
| Foreigners |  | 2219 (5.1) | 1892 (7.5) | <0.001 |
| Health Promotion Activities provided by the PHC | n (%) | 24454(56.5) | 13538(53.6) | <0.001 |
| Socioeconomic status index: |  |  |  |  |
| 1 | n (%) | 9731 (22.6) | 5033 (20.0) | <0.001 |
| 2 | n (%) | 8042 (18.7) | 4363 (17.3) |  |
| 3 | n (%) | 8388 (19.5) | 4722 (18.8) |  |
| 4 | n (%) | 9427 (21.9) | 5966 (23.7) |  |
| 5 | n (%) | 7503 (17.4) | 5065 (20.1) |  |
| CV Risk Factors: |  |  |  |  |
| Tobacco | n (%) | 2910 (17.4) | 1889 (18.9) | 0.002 |
| Dyslipidaemia | n (%) | 27420 (63.3) | 15715 (62.3) | 0.005 |
| Hypertension | n (%) | 27628 (63.8) | 15756 (62.4) | <0.001 |
| Obesity | n (%) | 11052 (44.7) | 7355 (48.3) | <0.001 |
| Clinical Parameters: |  |  |  |  |
| SBP (mmHg) | Mean, sd | 138.8 (16.5) | 140.5 (17.5) | <0.001 |
| DBP (mmHg) | Mean, sd | 80.2 (9.8) | 80.7 (10.3) | <0.001 |
| BMI (kg/m2) | Mean, sd | 30.0 (5.2) | 30.4 (5.4) | <0.001 |
| HbA1c (%) | Median, IQR | 6.3 (6.0, 6.7) | 7.8 (7.3, 8.6) | <0.001 |
| LDL (mg/dL) | Mean, sd | 103.3 (31.9) | 103.1 (34.1) | 0.57 |
| HDL (mg/dL) | Mean, sd | 50.1 (13.1) | 46.8 (12.4) | <0.001 |
| Estimated Glomerular Filtration Rate  (mL/min/1,73 m2) | Median, IQR | 86.7 (70.6, 91.4) | 87.0 (68.9, 92.2) | 0.55 |
| Albuminuria (mg/g) | Mean, sd | 40.0 (210.2) | 63.3 (424.6) | <0.001 |
| T2D Complications: |  |  |  |  |
| Coronary heart disease | n (%) | 4227 (9.8) | 2830 (11.2) | <0.001 |
| Stroke | n (%) | 2426 (5.6) | 1482 (5.9) | 0.14 |
| Peripheral Arteriopathy | n (%) | 1818 (4.2) | 1394 (5.5) | <0.001 |
| Renal Chronic Disease | n (%) | 1104 (10.7) | 806 (13.5) | <0.001 |
| Diabetic Nephropathy | n (%) | 1119 (11.6) | 1035 (19.2) | <0.001 |
| Retinopathy | n (%) | 898 (2.1) | 1229 (4.9) | <0.001 |

CV: cardiovascular. SBP: systolic blood pressure. DBP: diastolic blood pressure. BMI: body mass index. PHC: Primary health centre

**Additional file 5:** Baseline characteristics of the health centres.

|  |  |  |
| --- | --- | --- |
| Primary Health Centre Characteristics: |  |  |
| Number of Family doctors | Mean, sd | 17,06 (6,60) |
| Number of Nurses | Mean, sd | 15,57 (5,96) |
| Daily consultations of family doctors (patients/ day) | Mean, sd | 32.84 (2.45) |
| Daily consultations of nurses  (patients/day) | Mean, sd | 20.59 (1.77) |

**Additional file 6:** Adjusted ORs for the effect of sex and SES index on suboptimal glycaemic control

(HbA1c>7%) and every single cardiovascular target.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Multilevel model 5  Adjusted OR by controlled BP cluster and others covariables  (95% CI) N:48,884 | | Multilevel model 6  Adjusted OR by controlled LDL, cluster and others covariables  (95% CI)  N:33,801 | | Multilevel  model 7  Adjusted OR by controlled BMI, cluster and others covariables  (95% CI)  N:39,827 | |
| Sex (male) | 1.00 (0.96-1.04) | 0.98 (0.93-0.97) | | 0.98 (0.94-1.02) | |

**Socioeconomic Status index**

**(Quintile 1: least deprived, reference)**

|  |  |  |  |
| --- | --- | --- | --- |
| Quintile 2 | 0.93(0.84-1.02) | 0.96 (0.86-1.08) | 0.90(0.81-1.00) |
| Quintile 3 | 0.97(0.88-1.07) | 0.98 (0.87-1.12) | 0.96(0.86-1.07) |
| Quintile 4 | 1.12(1.02-1.23) | 1.20(1.05-1.36) | 1.10(0.99-1.22) |
| Quintile 5 | 1.11(1.01-1.23) | 1.13(1.00-1.28) | 1.07(0.96-1.19) |
| Age | 0.96(0.95-0.96) | 0.96 (0-96-0.97) | 0.96(0.962-0.967) |
| Evolution of T2D | 1.08(1.07-1.08) | 1.08(1-07-1.08) | 1.08(1.07-1.08) |
| Uncontrolled BP | 1.22(1.17-1-27) |  |  |
| Uncontrolled LDL |  | 1.05 (1.002-1.10) |  |
| Obesity |  |  | 1.19(1.14-1.24) |
| Coronary heart disease | 1.12(1.05-1.19) | 1.11(1.02-1.20) | 1.06(0.99-1.14) |
| Peripheral Arteriopathy | 1.23(1.12-1.34) | 1.19(1.07-1.33) | 1.20(1.09-1.32) |
| Diabetic Retinopathy | 1.73(1.56-1.92) | 1.73(1.51-1.98) | 1.76(1.57-1.98) |
| AIC /BIC | 64650/64773 | 44455/44573 | 53022/53142 |
| Variance of the constant | 0.0009  (0.0006-001) | 0.001  (0.0009-0.002) | 0.001  (0.0007-0.001) |
| Residual variance | 0.21(0.21-0.22) | 0.21(0.21-0.22) | 0.22 (0.21-0.22) |

CI: confidence internal. AIC Akaike information criterion. BIC: Bayesian Information Criterion