Electronic supplementary material (ESM)

**ESM Table 1.** Odds ratios (ORs) and 95% confidence intervals (CIs) of heart disease in relation to lifestyle among people with and without type 2 diabetes from Generalized Estimating Equation models (unfavourable lifestyle as reference)

**ESM Table 2.** Additive interaction between lifestyle and type 2 diabetes (T2D) for the risk of heart disease.

**ESM Table 3.** Odds ratios (ORs) and 95% confidence intervals (CIs) of different forms of heart disease related to type 2 diabetes from Generalized Estimating Equation models (type 2 diabetes-free as the reference) among men and women

**ESM Table 4.** Odds ratios (ORs) and 95% confidence intervals (CIs) of different forms of heart disease related to type 2 diabetes (type 2 diabetes-free as the reference) from Generalized Estimating Equation models further adjusted for survival status.

**ESM Table 5.** Odds ratios (ORs) and 95% confidence intervals (CIs) of different forms of heart disease related to type 2 diabetes (type 2 diabetes-free as the reference) from Generalized Estimating Equation models using data available (excluding data with missing values for covariate) (n=35,445)
**ESM Table 1.** Odds ratios (ORs) and 95% confidence intervals (CIs) of heart disease in relation to lifestyle among people with and without type 2 diabetes from Generalized Estimating Equation models (unfavourable lifestyle as reference)

| Lifestyle       | type 2 diabetes | type 2 diabetes-free |
|-----------------|-----------------|----------------------|
|                 | Subjects  | Cases  | Basic-adjusted OR (95% CI)* | Multi-adjusted OR (95% CI)† | Subjects  | Cases  | Basic-adjusted OR (95% CI)* | Multi-adjusted OR (95% CI)† |
| Unfavourable    | 211      | 143    | Reference                     | Reference                     | 2404      | 550    | Reference                     | Reference                     |
| Intermediate    | 1713     | 1060   | 0.76 (0.56, 1.03)             | 0.68 (0.49, 0.93)          | 26830     | 5578   | 0.87 (0.79, 0.96)             | 0.74 (0.66, 0.82)           |
| Favourable      | 380      | 201    | 0.52 (0.37, 0.74)             | 0.44 (0.30, 0.63)          | 9925      | 1730   | 0.70 (0.63, 0.78)             | 0.55 (0.49, 0.62)           |

* Unadjusted.
† Adjusted for age, sex, education, and marital status.
**ESM Table 2.** Additive interaction between lifestyle and type 2 diabetes (T2D) for the risk of heart disease

| Joint exposure | No. of subjects | Heart disease | | |
| --- | --- | --- | --- | --- |
| Lifestyle | T2D | Cases | Basic-adjusted OR (95% CI)* | Multi-adjusted OR (95% CI)† |
| Intermediate/ Favourable | No | 36,755 | 7308 | Reference | Reference |
| Unfavourable | No | 2404 | 550 | 1.21 (1.10, 1.34) | 1.42 (1.28, 1.57) |
| Intermediate/ Favourable | Yes | 2093 | 1261 | 5.87 (5.35, 6.43) | 4.54 (4.10, 5.04) |
| Unfavourable | Yes | 211 | 143 | 8.39 (6.22, 11.31) | 8.47 (6.14 11.69) |

* Unadjusted.
† Adjusted for age, sex, education, marital status.

Measures of additive interaction for heart disease:

- Relative excess risk due to interaction (RERI): 3.507, 95% CI: 0.929, 6.084
- Attributable proportion due to interaction (AP): 0.414, 95% CI: 0.231, 0.597
- Synergy index (SI): 1.885, 95% CI: 1.318, 2.696
### ESM Table 3. Odds ratios (ORs) and 95% confidence intervals (CIs) of different forms of heart disease related to type 2 diabetes from Generalized Estimating Equation models (type 2 diabetes-free as the reference) among men and women

| Heart Disease                      | Males |                | Females |                |
|------------------------------------|-------|----------------|---------|----------------|
|                                    | Cases | OR (95% CI)* | OR (95% CI)† | Cases | OR (95% CI)* | OR (95% CI)† |
| All types heart disease            | 4955  | 4.45 (3.87, 5.10) | 4.10 (3.57, 4.70) | 4307  | 5.06 (4.40, 5.82) | 4.71 (4.09, 5.43) |
| Coronary heart disease             | 2568  | 4.48 (3.82, 5.25) | 4.20 (3.58, 4.93) | 1835  | 6.10 (5.17, 7.20) | 5.75 (4.86, 6.80) |
| Angina pectoris                    | 1060  | 4.01 (3.24, 4.96) | 3.79 (3.07, 4.69) | 876   | 5.28 (4.23, 6.59) | 4.91 (3.92, 6.15) |
| Acute myocardial infarction        | 1296  | 4.32 (3.55, 5.26) | 4.12 (3.38, 5.02) | 793   | 6.58 (5.31, 8.17) | 6.31 (5.06, 7.86) |
| Chronic ischemic heart disease     | 205   | 5.13 (3.47, 7.60) | 4.70 (3.16, 6.99) | 157   | 6.01 (3.86, 9.36) | 5.86 (3.74, 9.16) |
| Other coronary heart disease       | 7     | 20.70 (4.50, 95.22) | -       | 9     | 10.99 (1.89, 63.74) | -               |
| Cardiac arrhythmias                | 1750  | 3.42 (2.83, 4.13) | 3.24 (2.69, 3.91) | 1721  | 3.30 (2.71, 4.02) | 3.07 (2.52, 3.74) |
| Atrial fibrillation and flutter    | 1484  | 3.47 (2.84, 4.23) | 3.27 (2.68, 3.99) | 1351  | 3.35 (2.70, 4.17) | 3.04 (2.45, 3.78) |
| Other cardiac arrhythmias          | 266   | 3.03 (1.99, 4.63) | 3.04 (1.99, 4.65) | 370   | 3.02 (2.05, 4.44) | 3.05 (2.07, 4.50) |
| Heart failure                      | 637   | 5.13 (3.98, 6.62) | 4.61 (3.57, 5.96) | 751   | 5.51 (4.31, 7.05) | 5.16 (4.02, 6.62) |
| Congestive heart failure           | 87    | 7.59 (4.54, 12.69)| 6.92 (4.19, 11.41)| 94    | 5.17 (2.92, 9.16) | 4.57 (2.57, 8.15) |
| Left ventricular failure           | 48    | 5.07 (2.40, 10.73)| 4.93 (2.35, 10.37)| 62    | 4.80 (2.32, 9.92) | 4.12 (2.02, 8.44) |
| Unspecified heart failure          | 502   | 4.47 (3.37, 5.92) | 3.98 (2.99, 5.30) | 595   | 5.29 (4.06, 6.89) | 5.10 (3.89, 6.68) |

* Adjusted for age and education.

† Adjusted for age, education, marital status, body mass index, smoking, alcohol consumption, and physical activity.
**ESM Table 4.** Odds ratios (ORs) and 95% confidence intervals (CIs) of different forms of heart disease related to type 2 diabetes (type 2 diabetes-free as the reference) from Generalized Estimating Equation models further adjusted for survival status.

| Heart Disease                             | No. of Cases | OR (95% CI)* |
|-------------------------------------------|--------------|--------------|
| All types heart Disease                    | 9262         | 4.30 (3.90, 4.75) |
| Coronary heart disease                    | 4403         | 4.84 (4.31, 5.45) |
| Angina pectoris                           | 1936         | 4.39 (3.75, 5.13) |
| Acute myocardial infarction               | 2089         | 4.81 (4.14, 5.58) |
| Chronic ischemic heart disease            | 362          | 5.13 (3.81, 6.91) |
| Other coronary heart disease              | 16           | 14.73 (4.34, 49.96) |
| Cardiac arrhythmias                       | 3471         | 3.14 (2.74, 3.60) |
| Atrial fibrillation and flutter           | 2835         | 3.12 (2.69, 3.61) |
| Other cardiac arrhythmias                 | 636          | 3.20 (2.40, 4.27) |
| Heart failure                             | 1388         | 4.44 (3.70, 5.33) |
| Congestive heart failure                  | 181          | 4.86 (3.35, 7.06) |
| Left ventricular failure                  | 110          | 3.90 (2.33, 6.53) |
| Unspecified heart failure                 | 1097         | 4.16 (3.41, 5.08) |

* Adjusted for age, sex, education, marital status, body mass index, smoking, alcohol consumption, physical activity, and death.
**ESM Table 5.** Odds ratios (ORs) and 95% confidence intervals (CIs) of different forms of heart disease related to type 2 diabetes (type 2 diabetes-free as the reference) from Generalized Estimating Equation models using data available (excluding data with missing values for covariate) (n=35,445)

| Heart Disease                     | No. of Cases | OR (95% CI)* |
|-----------------------------------|--------------|--------------|
| All types heart Disease           | 6654         | 4.85 (4.32, 5.43) |
| Coronary heart disease            | 3374         |              |
| Angina pectoris                   | 1567         | 4.40 (3.67, 5.27) |
| Acute myocardial infarction       | 1513         | 5.35 (4.50, 6.37) |
| Chronic ischemic heart disease    | 279          | 5.07 (3.56, 7.23) |
| Other coronary heart disease      | 15           | 16.80 (5.13, 54.98) |
| Cardiac arrhythmias               | 2554         |              |
| Atrial fibrillation and flutter   | 1992         | 3.66 (3.09, 4.33) |
| Other cardiac arrhythmias         | 562          | 3.29 (2.42, 4.47) |
| Heart failure                     | 726          |              |
| Congestive heart failure          | 95           | 9.58 (5.96, 15.37) |
| Left ventricular failure          | 62           | 7.10 (3.72, 13.56) |
| Unspecified heart failure         | 569          | 5.92 (4.65, 7.54) |

* Adjusted for age, sex, education, marital status, body mass index, smoking, alcohol consumption, and physical activity.