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**Supplementary Fig 1** Forest plot demonstrated the sensitivity analysis of high and moderate quality studies.



**Supplementary Fig 2** Forest plot of adjust OR for the comorbidities of diabetes mellitus, heart disease, hypertension, chronic renal failure and depression.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Study | Selection | | | | Comparability | | Outcome | | | Quality Score |
| Representativeness of exposed cohort | Selection of the control | Ascertainment of exposure | Demonstration of the outcome | study controls for impactor | study controls for additional factor | Assessment of outcome | follow-up long enough for outcome | Adequacy of follow up of cohorts |
| Y.F. Chen 2015 | ★ | ★ | ★ | ★ | ★ |  | ★ | ★ | ★ | ★★★★★★★★ |
| Sultan A. 2017 | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ |  | ★★★★★★★★ |
| Naomi. S. 2018 | ★ | ★ | ★ | ★ | ★ | ★ | ★ | ★ |  | ★★★★★★★★ |
| C.Y. Hsu 2015 | ★ | ★ | ★ | ★ | ★ |  | ★ | ★ |  | ★★★★★★★ |

**Supplementary Table 1** Newcastle-Ottawa Scale for cohort study.

**Supplementary Table 2** Agency for Healthcare Research and Quality for Cross-sectional study.

**Supplementary Table 3** Meta-regression analysis conducted on age stratification, study design, research object, populations and study quality.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Study | Define the source | Inclusion/exclusion criteria | Time period for identifying patients | Indicate subjects were consecutive | Other aspects of the participants | Assessments undertaken for quality assurance purposes | Explain Patient exclusions | Confounding assessing and/or controlled. | Missing data handling | Summarize patient response rates and data completeness | Follow-up | Quality score |
| Naomi. S. 2015 | YES | NO | YES | YES | YES | YES | NO | YES | NO | NO | NO | 6 |
| J.H. Kim 2016 | YES | YES | YES | YES | YES | YES | YES | YES | NO | NO | NO | 8 |
| F.B. Gao 2016 | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | NO | 10 |
| ALPAY. A. 2014 | YES | YES | YES | YES | YES | YES | YES | YES | NO | NO | NO | 8 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Covariate | tau2 | I-squared\_res (%) | Adj R-squared (%) | P value | 95%CI |
| Age Stratification | 0.029 | 91.61 | 18.57 | 0.12 | 0.62-1.06 |
| Study Design | 0.037 | 95.72 | -3.66 | 0.45 | 0.67-1.21 |
| Research Object | 0.040 | 95.65 | -10.42 | 0.61 | 0.66-1.29 |
| Populations | 0.032 | 95.04 | 12.21 | 0.21 | 0.64-1.12 |
| Study Quality | 0.084 | 97.18 | 24.77 | 0.10 | 0.23-1.18 |