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A NON-RANDOM STATISTICAL METHOD TO ESTIMATE THE RELATIONSHIP BETWEEN ABI, HbA1C AND RISK FACTORS IN ELDER POPULATION IN SHANGHAI

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Objectives To evaluate the effect of propensity score when the randomised data is destructed or randomisation is unavailable in epidemiological observational studies. To explore the relationship between ankle-brachial index (ABI), HbA1C and other risk factors in the elder population in Shanghai.

Methods During June to September in 2011, 1095 subjects were interviewed including 138 diabetes patients and 957 control individuals in elder population in Shanghai. The non-randomisation data was distributed again using propensity score and the participants were assigned into two groups (diabetes group and non-diabetes group). Pearson correlation coefficient was conducted to estimate

the degree of relevance between ABI/HbA1C and other factors. Multiple linear regressions was used to explore independent risk factors causing ABI decreasing or HbA1C increasing. Multiple logistic regressions was used to explore the risk factors of diabetes.

Results The number of subjects available for the full-analysis set was 1095. In our study, 138 diabetes cases and 138 control individuals were matched according to propensity score greedy matching. The result of Pearson correlation indicated a positive correlation between ABI and PWV ($r=0.18$, $p=0.003$), DBP ($r=0.22$, $p=0.000$); And A negative correlation between ABI and TC ($r=-0.15$, $p=0.014$), TG ($r=0.12$, $p=0.048$), LDL-C ($r=0.12$, $p=0.049$); At the same time, there were a positive correlation between HbA1C and PWV ($r=0.23$, $p=0.000$), DBP ($r=0.13$, $p=0.037$), SBP ($r=0.15$, $p=0.011$), TC ($r=-0.18$, $p=0.002$), TG ($r=0.22$, $p=0.000$). Multiple linear regressive analysis showed that DBP, baPWV and TC were independent factors of ABI while baPWV and TG were independent factors of HbA1C. Logistic regressive analysis demonstrated that baPWV and age were interred final regression equation when Y was defined as diabetes patient. The final equation is: $Y=0.0819-0.002X_1+0.045X_2$.

Conclusions The propensity score matching has a good balance effect to the non-random data. There was no correlation between ABI and HbA1C; The DBP, baPWV and TC have the relationship with ABI; The baPWV and age were the risk factors of diabetes.