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Detecting Framingham cardiovascular risk by surrogate measures of insulin resistance: the Qazvin Metabolic Diseases Study, Iran

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Abstract:
Numerous surrogate indices of insulin resistance have been developed for epidemiological studies. The aim of this study was to examine nine surrogate indices of insulin resistance based on fasting measurements for predicting Framingham cardiovascular risk in Qazvin, Iran. 480 men and 502 women aged 20 – 72 years from Minoodar district of Qazvin attended in this cross sectional study. The 10-year risk of cardiovascular disease was calculated by Framingham risk scoring (FRS) algorithm. Nine indices of insulin resistance, including HOMA-IR, FIRI, IGR, ISI basal, QUICKI, Bennett's SI, McAuley's index, and the product of the triglycerides and glucose (TyG) index were evaluated. The receiver operating characteristic curves of surrogate indices for FRS were depicted and compared. Of 982, 1.1% and 10% of the subjects had >20% and 10-20% cardiovascular risk according to FRS, respectively. The AUCs of HOMAIR, FIRI, ISI basal and QUICKI for cardiovascular risk were similar. The TyG (AUC: 0.701) and McAuley (AUC: 0.677) indices had the greatest ability to detect individuals with ≥ 10% cardiovascular disease risk and their difference was not statistically significant. Although HOMA-IR is the most commonly used surrogate measure of insulin resistance, the TyG index can be useful for detecting cardiovascular disease risk.

Keywords:
Insulin Resistance, Triglycerides, Cardiovascular Diseases, ROC Curve

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