

The McAuley Index is a Better Marker of Insulin Resistance among Adult Reproductive-aged Women, Irrespective of Body Mass Index

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Abstract

Background: Age, sex, and BMI have significant impacts on insulin resistance (IR), requiring individual cut-offs of different insulin indices.

Aim: To assess the cut-off levels of IR using several insulin-derived indices in adult reproductive-aged females and compare their utility.

Method: This cross-sectional study included 196 eumenorrheic women aged 18-40 years, conveniently as a control group of a study after excluding pregnancy, lactation, h/o smoking/alcohol intake, hormonal contraceptive use, features of hyperandrogenism, and advanced systemic diseases. Fasting glucose, insulin, and lipid profiles were used to calculate different insulin indices by different formulas and metabolic syndrome by the International Harmonization Criteria. To determine the cut-off levels for IR, we took two different approaches. The 1st was the percentile method: the 75th percentile of fasting insulin, homeostasis model assessment of IR (HOMA-IR), fasting insulin resistance index (FIRI), and the 25th percentile of fasting glucose insulin ratio (FGIR), quantitative insulin sensitivity check index (QUICKI), and McAuley index. The 2nd one was the cut-off obtained from the highest Youden's index of a receiver operating characteristic (ROC) curve for predicting metabolic syndrome defined by International Harmonization criteria.

Result: The cut-off points of the fasting insulin, HOMA-IR, FIRI, McAuley index, FGIR, and QUICKI were 11.2 μ IU/mL, 2.3, 2.0, 6.8, 8.2, and 0.3, respectively, based on the IQR method, and 10.1 μ IU/mL, 2.6, 2.4, 6.8, 9.2, and 0.3 based on the ROC curve method. The McAuley index had the highest AUC (0.86) irrespective of BMI status and was better than fasting insulin and FGIR as a marker of IR. It also had the highest agreement (κ 0.45) with metabolic syndrome.

Conclusion: The McAuley index might be a better insulin-derived index of IR among adult reproductive-aged females. [*J Assoc Clin Endocrinol Diabetol Bangladesh*, 2025;4(Suppl 1): S73]

Keywords: McAuley index, Insulin resistance, Fasting glucose insulin ratio, Homeostasis model assessment of insulin resistance

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