## Metabolic and behavioral characteristics of metabolically obese but normal-weight women.

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### Abstract

A unique subset of individuals termed metabolically obese but normal weight (MONW) has been identified. These young women are potentially at increased risk for development of the metabolic syndrome despite their young age and normal body mass index. We seek to determine metabolic and behavioral factors that could potentially distinguish MONW women from young women with a normal metabolic profile.

Ninety-six women were classified as MONW \((n = 12)\) or non-MONW \((n = 84)\) based on a cut point of insulin sensitivity (as estimated by the homeostasis model assessment). Potentially distinguishing phenotypes between groups measured included serum lipids, ghrelin, leptin, adiponectin, body composition and body fat distribution, resting and physical activity energy expenditure, peak oxygen uptake, dietary intake, dietary behavior, and family history and lifestyle variables. Despite a similar body mass index between groups, MONW women showed higher percent body fat, lower fat-free mass, lower physical activity energy expenditure, and lower peak oxygen uptake than non-MONW women. Plasma cholesterol level was higher in MONW women, whereas no differences were noted for other blood lipids, ghrelin, leptin, adiponectin, and resting energy expenditure. MONW women had lower dietary restraint scores than non-MONW women, but no differences were noted in disinhibition, hunger, and dietary intake.

Stepwise regression analysis performed on all
subjects showed that 33.5% of the unique variance of the homeostasis model assessment was explained with the variables of percentage of body fat (17.1%), level of dietary restraint (10.4%), and age (6%). Both metabolic and dietary behavioral variables contribute to the deleterious metabolic profile of MONW women. They display lower insulin sensitivity due potentially to a cluster of sedentary behavior patterns that contribute to their higher adiposity. Furthermore, cognitive attitudes toward food (i.e. dietary restraint) and concomitant lifestyle behaviors may play a role in regulating insulin sensitivity in MONW women.