

## Association of education and marital status with normal weight metabolic obesity in men residing in Minoodar district, Qazvin

S. Hashemipour\*

N. Esmailzadehha\*\*

M. Yarjanli\*\*\*

A. Ziaee\*\*\*\*

\*Associate Professor of Endocrinology, Metabolic Diseases Research Center, Qazvin University of Medical Sciences, Qazvin, Iran

\*\*General Practitioner, Metabolic Diseases Research Center, Qazvin University of Medical Sciences, Qazvin, Iran

\*\*\*Assistant Professor of Endocrinology, Islamic Azad University, Tehran Medical Unit, Tehran, Iran

\*\*\*\*Professor of Endocrinology, Metabolic Diseases Research Center, Qazvin University of Medical Sciences, Qazvin, Iran

### \*Abstract

**Background:** Individuals with metabolic obesity but normal weight (MONW) are frequently undetected because of their normal body mass index (BMI). Therefore, it is important to identify factors associated with MONW.

**Objective:** The aim of this study was to determine the association of education and marital status with normal weight metabolic obesity in men.

**Methods:** This cross sectional study was conducted in 232 men with a BMI less than 25 kg/m<sup>2</sup> in Qazvin, Iran from September 2010 to April 2011. MONW was defined as insulin resistance (IR) in subjects with BMI less than 25 kg/m<sup>2</sup>. IR was determined using the 80th percentile of the homeostatic model assessment (HOMA) in normal subjects. Education was classified into four categories (1: elementary school or illiterate, 2: secondary or high school, 3: diploma and associate degree, and 4: Bachelor of Science and higher). Data were analyzed using T-test, Mann Whitney U test, logistic regression analysis and analysis of covariance.

**Results:** Of 232, 78 subjects (32.6%) had MONW. The second to fourth categories of education were associated with 6.2, 8.3, and 6.7-fold increased risk of MONW compared to the first category. Marriage frequency was 97.5%, 68.6%, and 41% in the first, third and fourth category, respectively. After adding marital status as covariate, there were no significant differences between the categories in mean HOMA-IR.

**Conclusion:** With regards to the results, MONW was more probable in men with higher level of education and unmarried men.

**Keywords:** Insulin Resistance, Education, Marital Status, Body Mass Index

**Citation:** Hashemipour S, Esmailzadehha N, Yarjanli M, Ziaee A. Association of education and marital status with normal weight metabolic obesity in men residing in Minoodar district, Qazvin. J Qazvin Univ Med Sci. 2016; 19 (6): 57-64.

**Corresponding Address:** Amir Ziaee, Metabolic Diseases Research Center, Boali-Sina Hospital, Boali-Sina Street, Qazvin, Iran

**Email:** [aziaee1963@yahoo.com](mailto:aziaee1963@yahoo.com)

**Tel:** +98-28-33360084

**Received:** 5 Mar 2015

**Accepted:** 27 Sep 2015