Environmental Science and Pollution Research
https://doi.org/10.1007/s11356-020-10122-6

SELECTED CASE STUDIES ON THE ENVIRONMENT OF THE MEDITERRANEAN AND SURROUNDING REGIONS

Associations between body mass index, waist circumference, waist circumference to-height ratio, and hypertension in an Algerian adult population

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Received: 5 March 2020 / Accepted: 13 July 2020

Abstract

The aim of our study was to analyze the associations between anthropometric measures and high blood pressure (HBP) in Algerian patients. A cross-sectional study was conducted among 785 adults with normal BMI (248), overweight (253), and obese (284), who were assessed with measurement of systolic and diastolic blood pressure, weight, height, and waist circumference (WC). Body mass index (BMI) and waist circumference-to-height ratio (WHtR) were calculated. We released receiver operating characteristic (ROC) curves for each anthropometric parameter to assess its discriminant power predictive of HBP in patients. Obese had a higher mean weight, WC, WHtR, systolic blood pressure (SBP), diastolic blood pressure (DBP), fasting glucose (FG), total cholesterol (TC), and triglycerides (TG) than overweight and normal weight. The prevalence of hypertension and diabetes was higher in obese than overweight and normal weight. Results showed that obesity increased the risk of hypertension by a factor of 1.54 (95% CI [1.15, 2.06], ($p = 0.004$). Pearson's correlation data analysis showed that there was no relationship between systolic blood pressure and anthropometric parameters (BMI, WC, and WHtR). Only DBP was negatively associated with WHtR in the overweight group. All these parameters had areas under the curve between 0.409 and 0.618.The cutoff value of anthropometric WHtR parameters associated with the risk of hypertension was higher among women than men regardless of the BMI group considered. Contrary to the data of the literature, the discriminating power of anthropometry in the prediction of the HBP is limited or absent whatever the value of the BMI.

Keywords BMI · Hypertension · Anthropometric parameters · Waist circumference-to-height ratio

Introduction

Hypertension—or elevated blood pressure—is a serious medical condition that significantly increases the risks of heart, brain, kidney, and other diseases (WHO (World Health Organisation 2019). Several meta-analyses have shown a log-linear relationship between high blood pressure and an increased risk of cardiovascular disease which increases considerably with age (Tackling and Borhade 2019. According to the World Health Organization, 39% of adults aged 18 years and over were overweight in 2016, and 13% were obese (WHO 2018). Currently, it is established that obesity increases the risk of diabetes, hypertension, and dyslipidemia, which have an impact on cardiovascular diseases (CVD) mortality and morbidity (Visscher and Seidell 2001; Klein et al. 2007).

Responsible editor: Lotfi Aleya

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Published online: 17 July 2020