Rev Esp Cardiol. 2016;69(6):579–587

Original article

Prevalence of General Obesity and Abdominal Obesity in the Spanish Adult Population (Aged 25–64 Years) 2014–2015: The ENPE Study

Javier Aranceta-Bartrina,[a,b,c,d,*] Carmen Pérez-Rodrigo,[b,c] Goiuri Alberdi-Aresti,[b,e] Natalia Ramos-Carrera,[f] and Sonia Lázaro-Masedo[f]

[a] *Medicina Preventiva y Salud Pública, Facultad de Farmacia, Universidad de Navarra, Pamplona, Navarra, Spain*
[b] *Sociedad Española de Nutrición Comunitaria (SENC), Barcelona, Spain*
[c] *Fundación FIDEC, Euskal Herriko Unibertsitatea-Universidad del País Vasco, Basurto-Bilbao, Bizkaia, Spain*
[d] *CiberOBN, Instituto de Salud Carlos III, Madrid, Spain*
[e] *School of Medicine, University College of Dublin, Dublin, Ireland*
[f] *SPRIM-España, Madrid, Spain*

Article history:
Received 23 December 2015
Accepted 11 February 2016
Available online 26 April 2016

Keywords:
Prevalence
Adults
Obesity
Abdominal obesity
Waist
Waist-to-hip ratio
Waist-to-height ratio

ABSTRACT

Introduction and objectives: According to the 2013 analysis of the Institute of Health Metrics, high body mass index values are the most important risk factor for disease in Spain. Consequently, we describe the prevalence of total obesity and abdominal obesity in the Spanish adult population (25–64 years) for 2014-2015.

Methods: The sample was taken from the ENPE study, a cross-sectional study with a representative sample of the noninstitutionalized population (n = 6800) carried out between May 2014 and May 2015. This analysis refers to the population between age 25 and 64 years (n = 3966). The anthropometric measurements were performed by trained observers at participants' homes according to standard international protocols. Body mass index $\geq$ 25 was defined as overweight and $\geq$ 30 as obesity. Abdominal obesity was classified as waist $>$ 102 cm in men and $>$ 88 cm in women.

Results: The estimated prevalence of overweight in the Spanish adult population (25–64 years) was 39.3% 95% confidence interval [95%CI], 35.7%-42.9%). The prevalence of general obesity was 21.6% (95%CI, 19.0%-24.2%) and, more specifically, was 22.8% (95%CI, 20.6%-25.0%) among men and 20.5% (95%CI, 18.5%-22.5%) among women, and rose with age. The prevalence of abdominal obesity was estimated at 33.4% (95%CI, 31.1%-35.7%) and was higher among women (43.3%; 95%CI, 41.1%-45.8%) than among men (23.3%; 95%CI, 20.9%-25.5%), and also rose with age.

Conclusions: The prevalence of general obesity and abdominal obesity in Spain is high, although the distribution differs according to autonomous community. A comparison with earlier data reveals a considerable increase in overweight, indicating the need for routine monitoring and comprehensive initiatives.

Prevalencia de obesidad general y obesidad abdominal en la población adulta española (25–64 años) 2014–2015: estudio ENPE

Palabras clave:
Prevalencia
Adultos
Obesidad
Obesidad abdominal
Cintura
Índice cintura-cadera
Índice cintura-talla

RESUMEN

Introducción y objetivos: Según el análisis de 2013 del *Institute of Health Metrics*, valores elevados de índice de masa corporal son el primer factor de riesgo de carga de enfermedad en España. Con base en este punto de interés, se describe la prevalencia de obesidad total y obesidad abdominal en la población adulta española (25-64 años) en 2014-2015.

Métodos: La muestra procede del estudio ENPE, estudio transversal en muestra representativa de la población no institucionalizada (n = 6.800), realizado entre mayo de 2014 y mayo de 2015. Este análisis se refiere a población entre 25 y 64 años (n = 3.966). Observadores entrenados realizaron las mediciones antropométricas en los domicilios según protocolos internacionales estandarizados. Se consideró sobrepeso valores de índice de masa corporal $\geq$ 25 y obesidad, índice de masa corporal $\geq$ 30. La obesidad abdominal se tipificó para valores de cintura $>$ 102 cm en varones y $>$ 88 cm en mujeres.

Resultados: La prevalencia de sobrepeso estimada en la población adulta española (25–64 años) es del 39,3% (intervalo de confianza del 95% [IC95%], 35,7-42,9%); la de obesidad general, del 21,6% (IC95%, 19,0-24,2%), el 22,8% (IC95%, 20,6-25,0%) entre los varones y el 20,5% (IC95%, 18,5-22,5%) entre las

* Corresponding author: Euskalduna 5 esc. izda., entlo. izda., 48008 Bilbao, Vizcaya, Spain.
E-mail addresses: jaranceta@unav.es, javieraranceta@gmail.com (J. Aranceta-Bartrina).

http://dx.doi.org/10.1016/j.rec.2016.02.009

mujeres, y aumenta con la edad. La prevalencia de obesidad abdominal se estima en el 33,4% (IC95%, 31,1-35,7%), mayor entre las mujeres (el 43,3%; IC95%, 41,1-45,8%) que entre los varones (el 23,3%; IC95%, 20,9-25,5%), y también aumenta con la edad.

Conclusiones: Las prevalencias de obesidad general y obesidad abdominal en España son altas, aunque con distribución desigual por comunidades autónomas. La comparación con datos precedentes plantea un aumento importante de la sobrecarga ponderal, lo que indica la necesidad de vigilancia sistemática y acciones integradas.

Abbreviations

AO: abdominal obesity
BMI: body mass index
WC: waist circumference
WHO: World Health Organization
WHR: waist-to-hip ratio
WHtR: waist-to-height ratio

INTRODUCTION

The large overall rise in obesity is one of the most difficult public health challenges faced by current society, a situation that not only affects higher income countries, but is also worsening in countries with low and middle income levels.[1] According to the World Health Organization (WHO), the world prevalence of obesity (body mass index [BMI] $\geq$ 30) has almost doubled between 1980 and 2014. Around the world, overweight and obesity are associated with more deaths than low weight.[1]

High BMI and abdominal obesity (AO) values are known to be associated with all-cause mortality,[2,3] morbidity,[4] and disability, and consequently with years of life characterized by deteriorated health and low quality of life,[5] a situation that has led to mounting health costs.[6] Obesity is a risk factor for diseases such as type 2 diabetes mellitus (DM), cardiovascular disease, and some types of cancer.[1,7,8]

Although premature morbidity and mortality due to cardiovascular disease in industrialized nations have dropped considerably in the last 40 years, this trend could be slowed or even reversed by the increase in obesity and type 2 DM. This rise in overweight and obesity among adults may be predictive of a potential continual increase in morbidity and mortality in upcoming decades.[1,9,10]

According to a report prepared with 2013 data by the Institute for Health Metrics and Evaluation on the disease burden attributable to the main 15 risk factors, expressed as a percentage of disability-adjusted life years, the risks associated with a high BMI and an improper dietary profile are ranked first and second in the analysis performed for Spain.[11,12]

Some authors report that the prevalence of obesity is possibly now holding steady.[13] However, a disparity has been observed in data from the adult population in different European countries, and rising trends continue to be reported among adults in some studies.[13,14]

The high prevalence of overweight makes constant monitoring necessary to improve strategies against obesity in Spain. In 2013, the WHO adopted the Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013-2020, which set a target to halt the rise in obesity between 2010 and 2025.[15]

Earlier studies have published obesity estimates in the Spanish adult population based on self-reported data,[16] but this type of information tends to underestimate the prevalence[17] because participants tend to underestimate their weight and overestimate their height when stating these parameters. The earliest population data based on adult weight and height measurements come from local and regional studies conducted in the 1990s. The SEEDO (Spanish Society for the Study of Obesity) study[18] performed the first estimate for all of Spain, using the analysis of a dataset composed of regional studies available from random population samples that followed comparable procedures. These data were updated years later in the DORICA study.[19] Between 2008 and 2010, the ENRICA study[20] provided estimates for adults using anthropometric data from a country-wide population sample.

Most population studies use waist circumference (WC) to estimate the prevalence of AO, an indicator that could overestimate and underestimate the risk of tall and short individuals, respectively, because height is not taken into consideration.[21] One proposed alternative is the waist-to-height ratio (WHtR), which has been found to be a good indicator of abdominal adiposity, similar to WC. Some meta-analyses and systematic reviews support its use as a better predictor of cardiovascular risk factors.[22–25] In 2011, Bergman et al[26] proposed the use of a body adiposity index as a direct estimator of the percentage of total adiposity.

The aim of our study was to describe the prevalences of overall obesity and AO in a representative sample of the Spanish population aged 25 to 64 years in 2014-2015 and to analyze the distribution of various indicators of body adiposity.

METHODS

All data were taken from the ENPE study (Spanish acronym for the Nutritional Study of the Spanish Population), a cross-sectional observational study designed to collect recent data on consumer dietary habits, anthropometric data, and physical activity in the noninstitutionalized Spanish population older than 3 years. The study was carried out in a representative probabilistic sample (n = 6800) selected by a random multistep procedure, performed in 3 phases, with stratification of the units from the first step (census sections) according to autonomous community. A second step considered the primary residences within each census unit, using a random selection procedure. Likewise, individuals were selected from each home, with controlled quotas and proportional allotments according to the population density by age bracket (3-8 years, 9-18 years, 19-64 years, and $>$ 65 years), sex, and municipality size, using the population census published by the National Institute of Statistics (January 2014). The scope of the study included all residents whose primary residence was in Spain.

Pregnant women were excluded from the study. Additionally, the anthropometric measurements excluded persons who