

Obesity, Overweight, and Health: A Longitudinal Analysis from the Survey of Health, Ageing, and Retirement in Europe

Background

The chances of encountering an overweight or obese European are high, especially among people approaching their retirement age.¹ Obesity is a chronic disease and is associated with a range of other health conditions, contributing to significant population losses, health burdens, and economic costs.² Obesity is associated with conditions like type II diabetes and cardiovascular disease, such as ischaemic heart disease, hypertension, stroke, heart attack and heart failure, and obesity is a confirmed factor increasing the risk of seven types of cancer (pancreatic cancer, liver cancer, colon cancer, breast cancer, endometrial cancer, and kidney cancer).³ Overweight and obesity contribute to long-term complications of the musculoskeletal system and are associated with low self-esteem, depression, and the onset of dementia.⁴ Not only are obese people at an increased risk of these conditions, but also those who are overweight.

¹ M., Ng, Gakidou, E., Lo, J., Abate, Y. H., Abbafati, C., Abbas, N., ... & Azargoonjahromi, A. (2025). Global, regional, and national prevalence of adult overweight and obesity, 1990–2021, with forecasts to 2050: a forecasting study for the Global Burden of Disease Study 2021. *The Lancet*, 405(10481).

² D. Aune, Sen, A., Prasad, M., Norat, T., Janszky, I., Tonstad, S., ... & Vatten, L. J. (2016). *BMI and all cause mortality: systematic review and non-linear dose-response meta-analysis of 230 cohort studies with 3.74 million deaths among 30.3 million participants*. *BMJ*, 353; M. Shekar, Popkin, B. (2020), *Obesity. Health and Economic Consequences of an Impending Global Challenge*. The World Bank.

³ GBD 2015 Obesity Collaborators. (2017). Health effects of overweight and obesity in 195 countries over 25 years. *New England journal of medicine*, 377(1); K.T., Kibret, Strugnell, C., Backholer, K., Peeters, A., Tegegne, T. K., & Nichols, M. (2024). Life-course trajectories of body mass index and cardiovascular disease risks and health outcomes in adulthood: Systematic review and meta-analysis. *Obesity Reviews*, 25(4), e13695; S. G., Uzogara (2017). Obesity epidemic, medical and quality of life consequences: a review. *Int J Public Health Res*, 5(1), 1E; Pati, S., Irfan, W., Jameel, A., Ahmed, S., & Shahid, R. K. (2023). Obesity and Cancer: A Current Overview of Epidemiology, Pathogenesis, Outcomes, and Management. *Cancers*, 15(2).

⁴ E., Pedditizi, Peters, R. & Beckett, N. (2016). The risk of overweight/obesity in mid-life and late life for the development of dementia: a systematic review and meta-analysis of longitudinal studies. *Age and ageing*, 45(1); Rindler, G. A., Gries, A., & Freidl, W. (2023). Associations between overweight, obesity, and mental health: a retrospective study among European adults aged 50. *Front Public Health*. 2023; 11.

Objective

This study investigates the prevalence of obesity/overweight related health conditions for Europeans aged 50+ and its possible long-term effects, using data from the Survey of Health, Ageing, and Retirement in Europe.

Methods

We analyzed panel data for 16,184 individuals from nine countries from waves 4 and 9 of the survey, conducted in 2010/2011 and 2021/2022.¹ The health outcomes included self-reported health, mental health and four chronic health conditions: diabetes or high blood sugar, a heart attack, high blood pressure or hypertension, and arthritis, including osteoarthritis. We used the depression scale EURO-D to evaluate how obesity is related to emotional health or depression.

Multivariate logistic regression analysis was used to predict health outcomes focusing on the importance of the Body Mass Index, and the occurrence of a deterioration in health status or diagnosis of disease in the follow-up time. We included standard socio-demographic covariates known in the literature as significant for health status and the occurrence of obesity, such as educational attainment (primary, secondary or tertiary education), household income (percentiles), marital status, currently smokes or has ever smoked and age. In this set of controls we also included health information about the presence of more than three limitations on activities of daily living (ADL) and number of chronic diseases.

Results (preliminary)

The prevalence of obesity and overweight changes in adulthood, taking the shape of an inverted U, and weight gain around retirement age (earlier for men than women), followed by a decline in older age. The prevalence of men with obesity (BMI \geq 30) in wave 4 of the study was highest among those aged 60–64 (23.9%) and 65–69 (23.8%), and among women aged 65–69 (25.4%) and 70–74 (25.2%). Among the oldest people (85+), these shares were 11.3% among men and 15.2% among women. During the 10-year observation period, there were age-related changes in BMI. The highest proportion of people with an increase in BMI (by more than 2.5 kg/m²) was recorded among people aged 50–59 and 60–69 (20.6% and 15.8%, respectively), while the largest proportion of

individuals with a decrease in BMI was observed among individuals aged 70–79 and 80 and older (24.3% and 26.3%, respectively).

The obese, overweight and underweight individuals had significantly higher risks for most of the health conditions studied, as well as were more vulnerable to a deterioration in health compared to people of normal weight in the cross-sectional analysis and over a 10-year period. The strongest effect occurs in people living with obesity, especially those with severe obesity.

The relative risk in the fully adjusted regression model for high blood pressure or hypertension (ever diagnosed/currently present) in individuals with severe obesity (BMI ≥ 35) was 6.60 (95% CI: 5.13–8.48), with obesity ($30 \leq \text{BMI} < 35$) 3.49 (2.97–4.11) and with overweight ($25 \leq \text{BMI} < 30$) 1.71 (1.50–1.95). For diabetes or high blood sugar (ever diagnosed/currently present), it was even higher, at 9.72 (7.10–13.39), 4.82 (3.65–6.36) and 2.19 (1.68–2.85) in relation to people of normal weight ($18.5 \leq \text{BMI} < 25$). The risk of heart attack (ever diagnosed) was significantly higher for individuals with obesity 1.71 (1.34–2.19), severe obesity 2.56 (1.87–3.49) and underweight 2.18 (1.00–4.12). Our analyses did not confirm an increased risk of arthritis, including osteoarthritis, based on BMI category. In the 10 years of follow-up analysis, the relative risk of a new or recurrent disease for high blood pressure or hypertension was greatly reduced and was significantly higher only in the overweight group, and was not significant for heart attack. However, it remained very high for new incidents of diabetes or high blood sugar.

The effects of obesity on health outcomes such as self-reported health and mental health varies significantly between women and men, and was more linked to obesity in women. For example, the relative risk of depression (i.e. the occurrence of more than 3 symptoms on the Euro-D scale) was slightly higher only in women who were severely obese, reaching 1.27 (1.02–1.60), and was high in underweight women, reaching 1.99 (1.17–3.21). In this model, as in most other analyses, the significant influence of covariates such as the number of chronic diseases, activities of daily living index, education and, in some cases, income percentiles was confirmed.

The change in BMI during the study period had little impact on health outcomes. However, a greater reduction in BMI was often associated with a deterioration in self-

reported health and an increase in symptoms of depression, which may have been due to significant weight loss and the onset of a serious illness.

Conclusions: [*research in progress*]

ⁱ Respondents participating in waves 4 and 9 of the SHARE survey from countries such as Austria, Spain, Italy, France, Switzerland, Belgium, Czechia, Estonia, and Slovenia were included in the analysis. There are plans to expand the study and analyze data from other waves of the SHARE survey, assuming a 10-year follow-up period and other countries (with a high follow-up rate).