

Purpose

Promoting Understanding & Research into
Productivity, Obesity Stigma & Employment

Obesity stigma and employment in Spain

Billy Campbell, Zofia Bajorek, Stephen Bevan, Dan Muir



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Acknowledgements

The authors are indebted to the Spanish affiliates who have taken time to speak to us and input into this research. This project has also benefitted from the expertise of Zoe Gallagher at IES for formatting the report, to Steve O'Rourke and Sophia Bell for their help with designs and Dan Smith from bionicgraphics for the final design. Finally, thank you to Novo Nordisk for funding this research and continuing our learning and understanding of obesity stigma and employment.

Institute for Employment Studies

City Gate

185 Dyke Road

Brighton BN3 1TL

UK

Telephone: +44 (0)1273 763400

Email: askIES@employment-studies.co.uk

Website: www.employment-studies.co.uk

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IES project code: 6142



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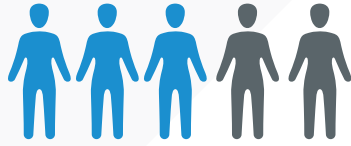
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Executive Summary



ALMOST
3 in 5
People



IN THE OECD ARE LIVING WITH OVERWEIGHT

WITH ABOUT

40%

OF THIS GROUP
LIVING WITH OBESITY



IN SPAIN
16%

OF ADULTS

ARE LIVING WITH OBESITY ACCORDING TO BMI

36%

ARE LIVING WITH OBESITY



ACCORDING TO ABDOMINAL OBESITY MEASURES

BY

2050

OVER 8% OF HEALTH SPENDING IN OECD COUNTRIES

WILL BE ACCOUNTED FOR BY TREATING OBESITY AND RELATED HEALTH CONDITIONS

IN SPAIN

€26 BILLION



OF ANNUAL HEALTHCARE COSTS ARE DEDICATED TO TREATING OVERWEIGHT AND OBESITY AND RELATED HEALTH CONDITIONS

ACROSS THE OECD COUNTRIES OBESITY HAS BEEN SHOWN TO REDUCE LIFE EXPECTANCY



0.9 YEARS

&

4.2 YEARS

IN SPAIN HEALTHY LIFE YEARS ARE REDUCED BETWEEN

2.7 YEARS



3.5 YEARS



FOR PEOPLE LIVING WITH OBESITY

COMPARED WITH SPANISH PEOPLE OF AVERAGE WEIGHT

ON AVERAGE THERE IS A

9%



WAGE PENALTY

FOR WOMEN LIVING WITH OBESITY COMPARED TO WOMEN OF AVERAGE WEIGHT

SPANISH REDUCTION

€2,051 PER WOMAN

€3.49 BILLION

FOR ALL WORKING AGE WOMEN

OUR ESTIMATE SUGGESTS

A WOMAN LIVING WITH OBESITY AGED



18 YEARS



TO RETIREMENT

MAY LOSE UP TO €110K

BY

2030

3.1m MORE SPANISH CITIZENS



WILL BE LIVING WITH OVERWEIGHT AND OBESITY

€30BN COSTING AN ESTIMATED A YEAR



Executive summary

Despite the growing evidence of the clinical, social and economic consequences of obesity in OECD countries, it remains rare to find significant attention being paid to obesity stigma and discrimination in employment. This report sets the available data on employment outcomes for people living with obesity in Spain in an international context. It highlights data gaps and several areas where Spanish policy makers, healthcare professionals and employers might consider action to ensure that people living with obesity can enjoy equal employment opportunities. Key findings from our review of the evidence include the following:

- Rates of obesity globally have tripled since 1975 with over 650 million adults and at least 340 million children living with overweight or obesity. Almost three in five people in the OECD are living with overweight with about 40 per cent of this group living with obesity.
- In Spain 16 per cent of adults are living with obesity according to BMI, and 36 per cent of people are living with obesity, according to abdominal obesity measures. The prevalence of obesity is higher in deprived Spanish communities, and it is strongly related to educational attainment. For example, a higher proportion of adults whose education did not progress beyond secondary school are living with obesity compared with university graduates and this variation is especially notable among women.
- By 2050 over 8 per cent of health spending in OECD countries will be accounted for by treating obesity and related health conditions. In Spain around €26bn of annual healthcare costs are dedicated to treating overweight and obesity and related health conditions.
- Across the OECD, obesity has been shown to reduce life expectancy by between 0.9 years and 4.2 years. In Spain this figure is 2.7 years, with healthy life years among people living with obesity being reduced by 3.5 years compared with Spanish people of average weight.
- International studies have shown that people living with obesity are subject to stigma and discrimination in the labour market and at work. This includes lower hiring success, reduced promotions and less access to training and development opportunities. In Spain there is evidence of weight-based discrimination in recruitment, particularly affecting women. There is also evidence that Spanish people living with overweight and obesity leave the labour market early and claim disability benefits at a higher rate than workers of average weight.
- There is, on average, a 9 per cent wage penalty for working age women living with obesity compared with women of average weight. In Spain this equates to an average reduction in annual earnings for women living with obesity of €2,051 for each woman or €3.49bn for all working age women living with obesity.
- This wage penalty appears to begin as women leave full-time education and enter the labour market and continues into later career stages. Our estimates suggest that, over a career, a woman living with obesity at 18 years may miss out on as much as €110k by the time she retires. Some research studies suggest that this disadvantage persists even if an individual reduces their weight during their working life. Much, if not all, of this wage penalty can be explained by stigma and discrimination.
- During the Covid-19 pandemic, it became clear that people living with obesity had an elevated risk of developing more severe symptoms, requiring hospitalisation and developing the longer-term symptoms of so-called long-Covid. These risks were especially high in countries, like Spain, where more than 50 per cent of the population is living with overweight and obesity. The medium to long-term public health and employment consequences of these risks are not yet clear, though their potential impact on job retention, return to work and other employment outcomes will need to be monitored closely in the coming months.

It is predicted that, by 2030 there will be 3.1m more Spanish citizens living with overweight and obesity, increasing health system costs by an estimated €3bn each year. Despite this, the Spanish government has not published a formal obesity strategy since 2004, and public health guidance contains almost no mention of the employment outcomes experienced by people living with obesity.

We conclude that there are several actions which could be considered by the Spanish government, Spanish healthcare professionals and Spanish employers to improve employment outcomes for people living with obesity in Spain. These include:

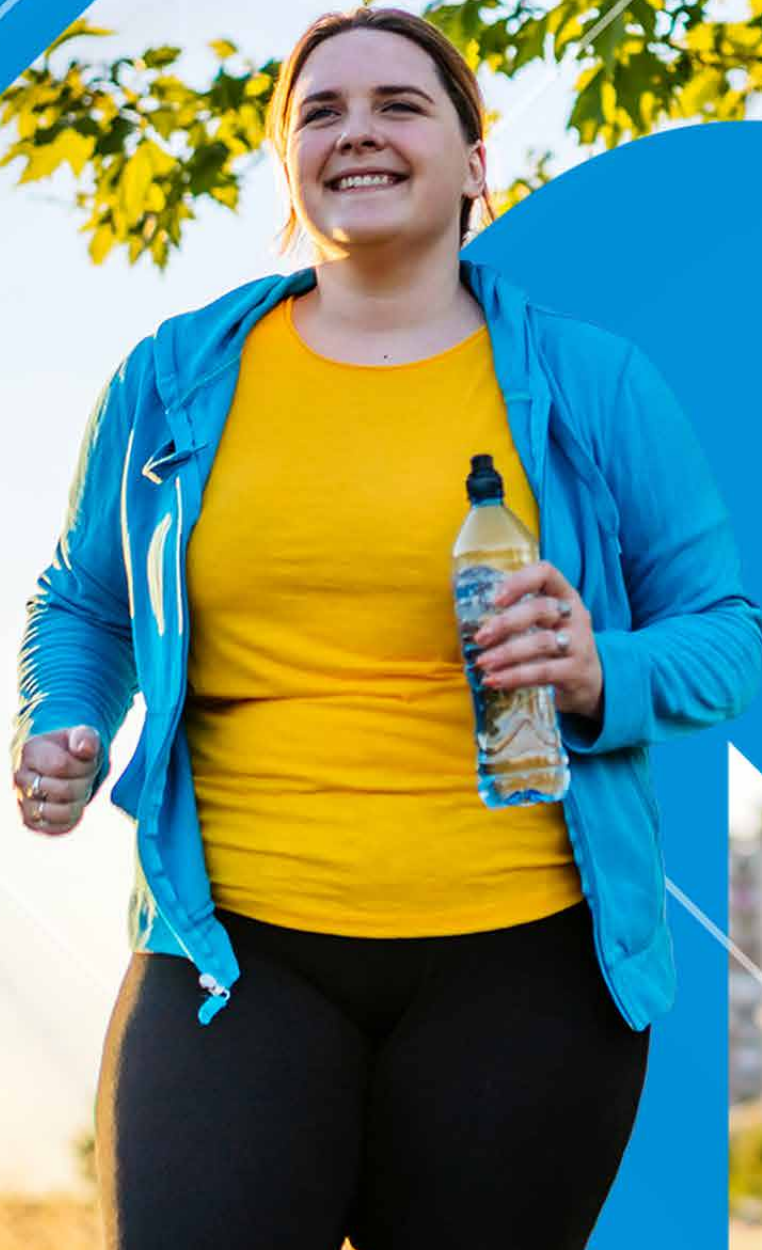
Spanish Policymakers: Consider clarifying the legal status of obesity in employment and equalities legislation; review existing support provided to family doctors to discuss employment issues positively with patients living with obesity; consider including employment as a more explicit theme in any future Spanish obesity strategy, including the principle that work should be a clinical outcome of healthcare interventions; consider providing guidance to healthcare professionals and employers on the treatment and rehabilitation of people living with obesity, who are at risk of both Covid-19 and long Covid. There may also be an opportunity to consider the career and wage consequences of childhood obesity, especially among young women living with obesity.

Spanish Healthcare Professionals: Give consideration to job retention and vocational rehabilitation when discussing treatment and care of patients living with obesity; taking mental health comorbidities more explicitly into account when treating obesity; encouraging supported self-management by patients, especially when they are discussing workplace adjustments with employers, to ensure that employment supports job retention and rehabilitation.

Spanish Employers: Consider including obesity explicitly in diversity and inclusion HR policies; seeking to eliminate any practice which explicitly or implicitly requires employees to comply with standards of dress or appearance which may be stigmatising to employees living with obesity; ensuring workplace health promotion activity does not reinforce stigmatising stereotypes; consider creative approaches to job redesign or job crafting which allow people living with obesity to flourish at work.

Even if the Spanish government is not currently prepared to designate obesity as a disease in its own right, there is compelling evidence that it is an important risk factor for a range of chronic and fluctuating health conditions which affect work ability and reduce work related quality of life. It is already the case that the prevalence of obesity in Spain is strongly linked to social deprivation and disadvantage. Our view is that obesity should be considered as a policy priority to ensure that this disadvantage and inequality is not further exacerbated by systemic and institutional stigma or discrimination in both the Spanish labour market and in Spanish workplaces.

Introduction





Introduction

Obesity is now regarded by many to be one of the fastest growing threats to individual health and wellbeing, to social inclusion and to the wider economy, (EASO, 2015). Much of the stigma towards people living with obesity is based upon the misinformed assumption that those living with obesity can readily control their weight by eating less and exercising more. This simplistic view can result in open discrimination and stigma towards individuals living with obesity, which occurs in many settings and seemingly remains acceptable. However, this also means that positive attempts to make real progress in reducing both the prevalence and impact of obesity in society can be inhibited through low expectations.

The PURPOSE Programme¹

Research into obesity has often focussed on its prevalence and impact on society as a public health issue. However, the impact that obesity can have on employment outcomes and labour market participation are often neglected in obesity strategies and are under-researched. The Purpose (Promoting Understanding and Research into Productivity, Obesity Stigma and Employment) Programme, launched by the Institute for Employment Studies (IES) in November 2020 aims to focus on the ways in which the employment and labour market outcomes of people living with obesity can be improved with joined-up action from a number of relevant stakeholders (including policymakers, employers, healthcare professions, the wider public, the media and people living with obesity themselves). Our research is highlighting what the evidence shows about the origins of weight stigma, the consequences for people living with obesity and their working lives, and the wider economy and society of which they are a part.

The Purpose Programme aims to present access to evidence about the stigma and discrimination faced by working age adults and to suggest practical actions which can help improve outcomes for people living with obesity. It is hoped that the evidence collected and presented through the Purpose Programme outputs will be used to:

- Help employers make recruitment, progression, performance and pay decisions;
- Ensure that people living with obesity are supported by both healthcare professionals and employers to remain in and thrive at work;
- Help policy makers to frame and deliver policies which give employees living with obesity the best opportunity to live full and fulfilling working lives.

In this report we are focusing on obesity stigma and discrimination in employment in Spain. We have carried out desk research to review the clinical and social science literature on obesity stigma and employment, examined data sources in Spain and internationally, and held interviews and correspondence with Spanish researchers and academics who have an interest in these topics. We begin with an overview of the definition and causes of obesity and a brief discussion about why the economic and employment consequences of obesity for people of working age may need to be given greater priority.

¹ Novo Nordisk has provided funding to the Institute for Employment Studies (IES) to undertake the creation of the PURPOSE programme, including the production of this report. Novo Nordisk has had no influence over the content of this report or this programme. IES retains full and final editorial control over this report and all aspects of the PURPOSE programme.

What is obesity?

Obesity definitions and causes

The World Health Organisation (2016) defined overweight and obesity as ‘*an abnormal or excessive fat accumulation that may impair health*’ and is commonly measured using the Body Mass Index (BMI) classification. Overweight is defined as a BMI of 25-29.9 kg/m² and obesity is defined as a BMI of 30 kg/m² and above (although lower cut-offs are used to define obesity in ethnic minorities, as a result of a higher risk of type 2 diabetes and cardiovascular disease among Asian groups). Although BMI is routinely used in diagnostic situations, treatment guidelines and clinical settings, there are debates as to whether methods such as the Edmonton Obesity Staging System, waist-to-hip ratio, waist circumference or body fat percentage methods would provide improved obesity measurements.

A number of international and national bodies identify obesity as a disease (eg WHO, American Medical Association and Obesity Canada), and more recently a compromise for EU4Health proposal was made listing obesity as a chronic disease was voted for by the Committee on the Environment, Public Health and Food Safety. Many experts believe that classifying obesity as a disease could ensure that obesity treatment is adequately prioritised and funded and could reduce the stigma that people living with obesity experience by highlighting the seriousness and consequences of obesity.

A popular perception is that obesity is mainly influenced by an individual’s self-control. This has led to the view that people living with obesity lack willpower and self-discipline. However, the UK Foresight report “Tackling Obesities: Future Choices” discussed the many, and often interrelated, causes of obesity, detailing the complexity of the condition, including:

- **Biology** – including the neurological and physiological causes of obesity, the role the brain plays in energy balance, genetics and hormonal variability can have an impact on an individual’s susceptibility to obesity.
- **Obesogenic Environment** – referring to environmental, social and cultural factors that could have an impact on obesity. For example, the accessibility of local facilities promoting active lifestyles and the food environment.
- **Inequalities** – especially in relation to social and economic inequalities. Health is closely related to the conditions in which people are born, grow and live in. Those in more deprived areas have greater health inequalities and are more likely to find themselves at the bottom of the ‘social gradient’ in health.
- **Employment** – the workplace and the way in which work is designed can have an impact on obesity. Shift work or changes in working hours can result in changes to biological rhythms, sleeping patterns and eating habits. Job pressures, autonomy, social stressors and the level of psychosocial support and interpersonal treatment have also been associated with weight gain.
- **Mental health/stress** – people living with depression have a propensity to develop obesity, but those living with obesity may also develop depression. There is also a link between some psychiatric medication for psychosis and weight-gain.

Obesity prevalence and consequences

Obesity prevalence

The prevalence of obesity has increased to become an issue of global concern due to its impact on health and economic outcomes. In 2016 the WHO reported that:

- Rates of obesity worldwide had tripled since 1975. More than 1.9 billion adults (aged 18 and over) were defined as overweight, of which 650 million adults were living with obesity.
- The prevalence of children living with obesity is also rising, with 41 million children under the age of five living with overweight and obesity, and over 340 million between 5–19 living with overweight and obesity.

The OECD (2019) reported that:

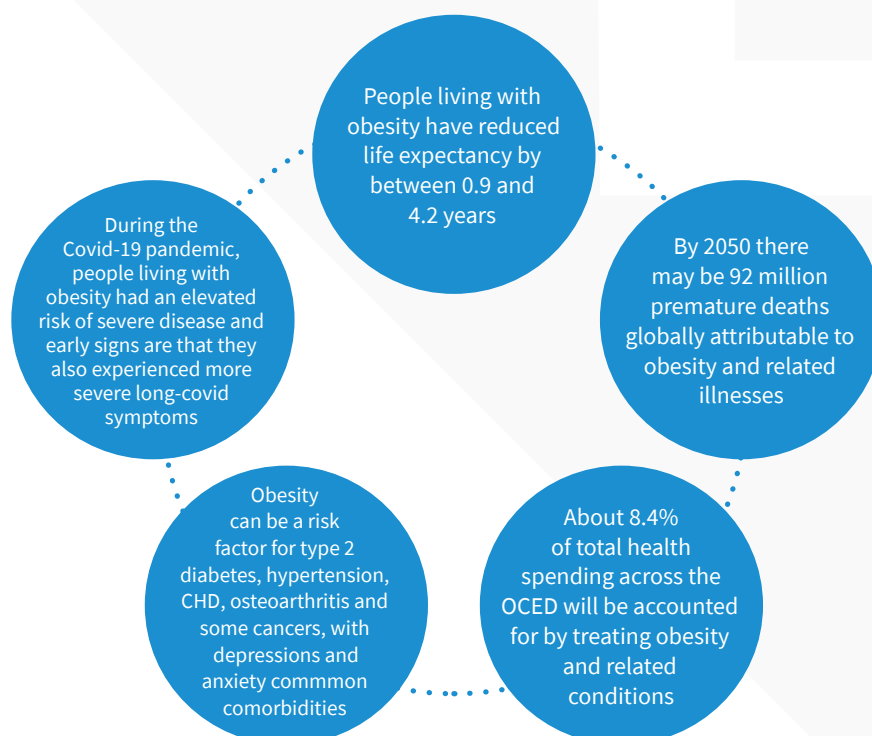
The prevalence of obesity has increased to become an issue of global concern due to its impact on health and economic outcomes. In 2016 the WHO reported that:

- The number of individuals living with severe obesity (BMI of 40 kg/m²), are now growing at the same rates as those with low-risk obesity (BMI of 30–34.9 kg/m²).
- Almost three in five people living in an OECD or EU member state are overweight, with about 40 per cent of these individuals living with obesity and the remaining 60 per cent at pre-obesity levels. There are however country variations, as some countries have higher numbers of people living with obesity than those living with pre-obesity.
- Men and women are reported to be equally likely to live with obesity, but men are more likely to live with overweight.

Consequences of obesity for health and the economy

Research has also focused on what the implications of rising levels of obesity will be for the health and the economy of developed nations. The OECD (2019) report highlighted a number of clinical and economic consequences of rising levels of obesity, summarised in Figure 1, below.

Figure 1 Clinical and economic consequences of obesity



The health and employment consequences of Covid-19 for people living with obesity have yet to be fully documented. However, we know that people living with obesity were at a higher risk of a positive test, hospitalisation, advanced level of treatment (e.g. mechanical ventilation/admission into intensive care units/critical care) and death as a result of contracting Covid-19 (Frühbeck et al., 2020). The World Obesity Forum (2021) also reported that in countries where less than half of the adult population is classified as living with obesity, the likelihood of death from Covid-19 was around one tenth of the level seen in countries where more than half of the population lives with overweight and obesity. There is now also emerging evidence that people living with obesity have an increased risk of long-Covid (developing long-term complications of Covid-19 beyond the acute phase)². Consequently, the World Obesity Forum (2021) argues that there is now a renewed urgency for collective action to improve the prioritisation of action towards the treatment of obesity, to reduce its impact on individual health and the countries' economies.

² <https://www.webmd.com/lung/news/20210608/obesity-increases-risk-of-long-covid-study-finds>

Obesity prevalence and impact in Spain





In Spain, as in many other developed economies, obesity is regarded primarily as a public health issue. This is as we have seen, because obesity and the other health conditions for which it is a risk factor, accounts for a growing proportion of healthcare resource utilisation and because it has a life course impact on population health. In this section we provide an overview of the current and future trends in obesity and its impact on the Spanish population and the economy.

Obesity in Spain

Obesity prevalence

In Spain, more than half (53.8 per cent) of the population aged over 18 was living with overweight or obesity in 2019 (World Obesity, 2021). Of this, 37.8 per cent classify as living with overweight, and 16 per cent with obesity. There are great gender disparities in the prevalence of overweight and obesity within the Spanish population, with men more likely to experience both. 61.7 per cent of men in Spain are living with either overweight or obesity: 45.1 per cent with overweight and 16.6 per cent with obesity. By contrast, 30.6 per cent of women in Spain are living with overweight and 15.3 per cent are living with obesity, totalling 45.9 per cent of women (World Obesity, 2021).

Using data from eight waves of the Spanish national health survey (among over 16-year-olds), Basterra-Gortari et al (2017) found that self-reported rates of obesity (using BMI) had increased, especially among men, between 1987 and 2012. In this survey population, age-adjusted prevalence of obesity doubled from 8.0 per cent in 1987 to 16.5 per cent in 2012. There is some evidence that, among older adults in Spain, the prevalence of obesity is stable or is in decline. A study by Gutiérrez-Fisac et al (2010) found that in men, the distribution of BMI did not vary in the period 2000–2010. In contrast, in women there was a reduction in both mean BMI and the prevalence of obesity; from 40.8 per cent to 36.3 per cent. This decline was greatest in women aged 60–69 years.

Other studies have been undertaken monitoring the prevalence of childhood obesity, as there has been evidence to suggest that levels of overweight and obesity have been increasing in children globally also (Bravo-Squicela et al, 2022). In Spain, the *El Mundo* newspaper led with a report that levels of obesity were stabilising in the country, but recent research undertaken by Bravo-Squicela et al (2022) suggests this may not be the case, and health and social policies to reduce the levels of childhood obesity in Spain are still required. Their research found that between 1999 and 2021 there were dramatic increases in the prevalence of both excess body weight and obesity, particularly in younger children. From Spanish children aged 2–6 the prevalence increased from 23.3 per cent during the period 1999–2010, to 39.9 per cent during 2011–2021. In children aged 7–13, the prevalence increased from 32.3 per cent during the period 1999–2010 to 35.3 per cent during 2011–2021. The authors concluded that despite the media issuing statements saying that childhood obesity had plateaued, the evidence suggests that levels of overweight and obesity in children remain very high in Spain, and current public health measures to address the obesity epidemic in Spain have not had the expected effects. The potential career earnings impact of obesity among young women in Spain are examined later in this report.

Studies have identified that when self-reporting data related to weight and BMI, people will commonly underestimate their weight. The ENRICA and ENPE studies were carried out in Spain between 2008–2010 and 2014–2015 respectively and attempted to quantify the number of people in Spain living with abdominal obesity; measured at >102cm waist circumference in men and >88cm in women. Through the recruitment of a representative sample of non-institutionalised and non-disabled people in Spain, The ENRICA study found that 22.9 per cent of the Spanish population over 18 is living with obesity as defined by BMI, more specifically 24.4 per cent of men and 21.4 per cent of women, and 36 per cent of people in Spain have abdominal obesity, notably 32 per cent of men and 36 per cent of females (Gutiérrez-Fisac et al., 2011). The ENPE study also recorded a higher prevalence of obesity within those aged 25–64 than studies that used self-reporting methodologies.

The prevalence of obesity as defined by BMI was 21.6 per cent, specifically 22.8 per cent of men and 20.5 per cent of females. The prevalence of abdominal obesity was estimated to be 33.4 per cent. The ENPE study recorded a much greater gender disparity within those living with abdominal obesity, 23.3 per cent of men were recorded to be living with abdominal obesity, compared to 43.3 per cent of women (Aranceta-Bartrina et al., 2016).

It is important to highlight the socioeconomic influences on the risks of living with obesity that is prevalent in Spain. For example, Spanish people from lower socioeconomic backgrounds are much more likely to experience obesity within their lifetime – and there is a particularly notable increased risk of developing obesity among women in lower socioeconomic groups (Costa-Font et al., 2014; García-Goñi and Hernández-Quevedo, 2012; Merino Ventosa et al., 2016; World Obesity, 2021). Gómez and Rajmil (2022) also reported in relation to childhood obesity, that the obesity rate is twice as high for children (in their study, those between 4–14) coming from low-income families (23.2% and 11.9% respectively), and childhood obesity is more frequent in schools located in areas with greater child poverty.

Additionally, people with lower educational attainment levels in Spain are more likely to experience obesity throughout their lifetime. Indeed, studies have found that education has a larger influence on a person's risk of developing obesity in Spain than economic status (Costa-Font et al., 2014; Witkam et al., 2021). Similar to socioeconomic status, there is a notable increase in the risk of developing obesity for women with lower educational attainment levels than men (Witkam et al., 2021). The relationship between educational attainment and prevalence of obesity was identified in both the ENRICA and ENPE studies. Data from the ENRICA study identified that 29 per cent of women with primary education or less were living with obesity, whereas the prevalence of obesity within women who had degree level education was 11 per cent (Aranceta-Bartrina et al., 2016; Gutiérrez-Fisac et al., 2011).

Health and social costs of obesity

Treating a high BMI and related conditions greatly increases costs to national health services. It is estimated that for every one-point increase in BMI, an individual's health costs increase by 2.3 per cent in Spain (Raebel et al., 2004). In 2019, obesity related health care expenditure in Spain was around €390 per capita (Okunogbe et al., 2021). In the same year, the total cost of health care attributable to overweight and obesity was estimated to be around €26bn (Okunogbe et al., 2021).

A study analysing the Spanish National Health Survey explored the healthcare demands of individuals living with overweight or obesity compared to individuals of average weight and found that people with obesity have higher rates of healthcare resource utilisation than those living with a BMI under 30 (Espallardo et al., 2017). Research shows that individuals in Spain with a BMI of 35 and over are twice as likely to visit a GP, physiologist or receive home-care compared to individuals with a BMI below 25 (Espallardo et al., 2017). In addition, the evidence also suggested that as BMI increases, an individual is more likely to require hospitalisation or require other health care services, such as laboratory services (Espallardo et al., 2017). Research also suggests that there is a strong relationship between obesity and several non-communicable diseases such as: musculoskeletal conditions, type-2 diabetes, hypertension, cardiovascular disease and chronic heart failure, among other non-communicable conditions (Burki, 2021; Gomez et al., 2021; Nyberg, 2018).

In addition to the physical health consequences experienced by those living with obesity, individuals living with obesity are more likely to experience poor emotional states and require interventions for mental health and restrictions on everyday life. As a consequence, research by Espallardo et al (2017) concluded that people with obesity in Spain are more likely to be prescribed antidepressants by their GP.

The additional risk of developing non-communicable diseases and poor mental health experienced by those living with obesity in Spain, has negative impacts on both life expectancy and the number of healthy life years. Life expectancy is reduced by around 2.7 years for those living with obesity and the number of healthy life years is reduced by 3.5 years in comparison to the wider population (Llopart-Carles et al., 2021; OECD, 2019).

Alongside the rise of overweight and obesity in children, there is now research suggesting that this can have implications for both their health and wellbeing and education attainment even at such a young age. Blanco et al., (2020), found that when comparing children living with obesity and those of average weight, those living with obesity reported greater levels of anxiety and depression, lower self-esteem and a greater frequency of both weight-related and competency teasing. Weight-related teasing was associated with lower levels of psychological wellbeing. Baile et al., (2022) reported that the psychological issues and low self-esteem that children living with obesity experience, as a result of teasing and bullying when younger, can last beyond childhood and could result in poor health-related quality of life and have negative consequences for poor academic and occupational domains (and not as a result of a lack of cognitive ability). In their study Baile et al., (2022) reported evidence of an obesity weight bias in a Spanish school setting, with over half of the students not choosing to work or collaborate with a classmate living with obesity, for any type of activity, with rejection rates higher than other protected characteristic (eg ethnicity, nationality, gender). The research also reported that females are the ones who display great rejection towards their peers with obesity, which was thought to be consistent with higher levels of obesity related stigma reported by women in later developmental stages. The research suggested that obesity bias can start at a young age, which can lead to negative psychosocial consequences in the future.

The cost of healthcare described above represents the direct costs to the economy as a result of the increased prevalence of obesity and, while stark in their own right, account for less than half of the total cost of obesity to the economy. The reduced life expectancy, number of healthy life years and the increasing risk of developing comorbidities and non-communicable diseases that people living with obesity experience, are having wider impacts on the Spanish economy through absenteeism, presenteeism, incapacity for work and premature withdrawal from the labour market/early retirement (Grazia-Arnaiz, 2-17; Llopart-Carles et al; OECD, 2019) – all of which reduce the overall productivity and total economic output of the labour force. Evidence from a study carried out in Spain estimates that the indirect costs to the economy caused by reduced economic output account for between 54–59 per cent of the total cost of obesity (Espallardo et al., 2017).

Projections

A study conducted by a group of academics has estimated that, should overweight and obesity continue to rise at the rate it did between 1987 and 2014, by 2030, there will be 3.1 million more people living with either overweight or obesity in Spain. As a consequence, the direct cost of overweight and obesity to public health services will increase by around €3 billion by 2030 (Hernández et al., 2019).

Studies have identified a relationship between the outbreak of the Covid-19 pandemic and an increase in susceptibility to obesity. As a result of public guidance to stay at home during the initial Covid-19 outbreak and the transition to working from home, a higher proportion of working age adults in Spain have been living more sedentary lifestyles (Najafabadi et al., 2020; Ráthonyi et al., 2021). This has led to a wider understanding among many employers and academics that conditions such as overweight and obesity are not solely lifestyle choices and cannot simply be reversed through changing habits. Rather, there are larger societal impacts that restrict lifestyle freedoms and access to healthy diets, impacting health and wellbeing in way that is beyond personal control.

A strategic approach to obesity in Spain

Unlike some countries experiencing a rising prevalence of obesity, Spain does not have a recent formal obesity prevention and reduction strategy available to the public, policy makers and healthcare professionals outlining the ways in which the Spanish government is working towards slowing the rising rates of obesity.

In 2004, the Spanish Strategy for Nutrition, Physical Activity and Prevention of Obesity (NAOS) was published by the Spanish Ministry of Health. The fundamental goal of the NAOS was to promote a healthy diet and encourage individuals to foster physical activity into their lifestyles to invert the trend of the prevalence of obesity, in an attempt to substantially reduce morbidity and mortality attributable to chronic disease (NAOS, 2004).

To promote a healthy diet and foster physical activity to invert the growing trend of the prevalence of obesity and thus to substantially reduce morbidity and mortality attributable to chronic diseases.

NAOS, 2004.

In order to achieve this goal, the NAOS set out to:

- Improve eating habits and increasing physical activity levels of the whole population by promoting policies and plans of action working towards this.
- Encourage nutritional education in the home and school environment.
- To encourage regular, frequent physical activity within the population, with a particular emphasis on school.
- To make professionals in the National Health Service more aware of the rising prevalence of overweight and obesity in order to foster early detection of obesity at general health check-ups.
- To monitor the proposed measures and evaluate the results obtained as a consequence of the strategy.

The majority of the agreement's interventions are targeted at a home and community level, encouraging the education of healthy eating and shopping. This support continues through to schools, who are encouraged to provide knowledge and skills to support good nutrition and lifestyle decisions. Businesses, especially those within the catering and hospitality sectors, are encouraged to promote healthy eating on their packaging and in their service environments, allowing individuals to make informed choices about their food.

The NAOS strategy, published in 2004, is aimed primarily at individuals and families, encouraging lifestyle amendments to change their health. Unlike many other national obesity strategies published more recently, the Spanish strategy places less emphasis on the socioeconomic and demographic factors that have a large influence on individuals' susceptibility to obesity. Since the publication of the NAOS, subsequent research has identified the influences of educational attainment, socioeconomic status and gender on obesity and the ways in which some lifestyle alterations are not accessible to these populations.

The labour market, employment and productivity consequences of obesity in the working age population of Spain, has however received considerably less attention. Yet it is probably important that policymakers, healthcare professionals and employers also focus on the employment outcomes associated with obesity because of their links with the public health and social inclusion priorities of the Spanish government.

Why consider obesity and employment?



As previously discussed, employment can be viewed as one of the multifactorial causes of obesity and, for people living with obesity, many employment outcomes are poorer as a result of attitudes to this condition. There are a number of individual, organisational and economic reasons to suggest why the relationship between employment and obesity should be given greater priority. For example:

- The McKinsley Global Institute (2014) estimated that in the UK, the total economic impact of obesity on employers was \$7 billion, of which \$5 billion came from decreased productivity in the workplace rather than absenteeism.
- However, Bajorek and Bevan (2019) cited evidence that while there is a link between people living with obesity and both sickness absence and presenteeism, this could be related to the ways that employees living with obesity are treated in the workplace.
- People living with obesity may also be more at risk of permanent work loss and unemployment (Black, 2016), which could increase costs to welfare systems and have further implications for healthcare systems. Those living with both obesity and at least one long-term chronic condition are eight per cent less likely to be employed the following year (OECD, 2019).
- There is also evidence of a life-long employment and economic cost of obesity. Children living with overweight do less well at school, and are less likely to complete higher education, creating potential conditions for diminished levels of human capital for the future (OECD, 2019).

Evidence shows that good quality work can be beneficial for an individual's health and wellbeing. However, recent research suggests that employees living with obesity are seen as a 'risk' to businesses because of the impact they may have on an organisation's productivity. Much of this is based on weight-stigma and weight-discrimination, and in some sectors the 'aesthetic labour market' (where personal appearance is regarded as an important factor in deciding a person's suitability for a job). Bajorek and Bevan (2020) reported that evidence of weight-stigma could be seen at every stage of the employment cycle. For example :³

- Recruitment and selection practices (and hiring success) can be affected as a result of the negative stigmatised perceptions often associated with employees living with obesity, irrespective of the nature and content of the role (Flint et al., 2016).
- Employees living with obesity (especially women) are subject to an average wage penalty of 9 per cent.
- Positive employee relationships and psychosocial support in the workplace is reduced for employees living with obesity which can have implications for health and wellbeing and individual coping behaviours.
- Obesity can be a barrier to progression and promotion opportunities, and employees living with obesity have reported being assigned to unfavourable positions with fewer opportunities to demonstrate successful performance and to be recommended for promotions.
- Some research suggests an employee's weight may be a factor in employment retention, redundancy and wrongful termination. Evidence also suggests a link between individuals living with obesity and unemployment.

Workplaces can also be an ideal arena to support employees living with obesity to access advice and can be a valuable setting in which health promotion can be offered. Some workplaces are developing their health programmes and interventions with the aim of improving individual health and wellbeing, in which weight-management programmes are included. However, as Bajorek and Bevan (2021) ⁴ reported, all too often such programmes may inadvertently reinforce obesity stigma, with the belief that overweight and obesity can be overcome by simply eating less and doing more through individual willpower. The discourse around workforce health is focussed on the harm of

³ See here for more detail: https://www.employment-studies.co.uk/system/files/resources/files/Obesity%20Stigma%20at%20Work%20-%20Improving%20Inclusion%20and%20Productivity_0.pdf
⁴ See here for more detail: <https://www.employment-studies.co.uk/system/files/resources/files/Living%20and%20working%20with%20obesity.pdf>

poor wellbeing, rather than focussing on an 'asset-based' view of workplace health, and persuading business leaders and policy makers to think more seriously of health as an asset, and recognise the resourcefulness of their current workforce.

Obesity and employment in Spain

Whether it be in the media, the health system or in the workplace, individuals living with obesity are frequently subjected to heightened levels of stigma, discrimination and disadvantage compared to those living within the 'ideal' BMI range in Spain (Casadó-Marín and Grazia-Arnaiz, 2019). The heightened level of stigma and discrimination people living with obesity experience is something yet to be acknowledged by the Spanish government or among public health leaders, perhaps in part due to the impact weight-based stereotypes or discrimination has on the economy.

In common with many other obesity strategies, the NAOS omits any mention of the relationship between employment and obesity. Since its publication, further empirical studies have identified a relationship between working environments and increased BMI in Spain (Benazizi et al., 2018; Martín et al., 2008). In particular, shift workers and night workers have a higher prevalence of obesity (Peñalvo et al., 2021) and, by contrast, sectors that recruit higher paid and higher skilled workers, have lower rates of obesity (Ameje et al., 2019; Hernández-Yumar et al., 2018).

Implications for recruitment

Studies carried out internationally have found that, within the recruitment process, individuals living with obesity are often perceived by employers as less competent, less qualified, having less leadership potential and likely to be less successful than candidates not living with obesity (Flint and Snook, 2014; Levine and Schweitzer, 2015; Schulte et al., 2007). As a consequence, employers are often more inclined to recruit a candidate who is of average weight, subsequently impacting the employment opportunities of those living with obesity (Flint et al., 2016).

Through empirical research, many of these international studies have estimated that between 45 per cent and 93 per cent of employers would reject an application based on a candidate's weight (Flint et al., 2016; Williams, 2009; World Economic Forum, 2019). This disadvantage has the potential to increase economic hardship on populations living with obesity which, as statistics show, also increase an individual's susceptibility to a higher BMI. A study carried out specifically in Spain identifies weight discrimination in multiple Spanish recruitment processes, finding that some Spanish employers expect lower productivity from those living with obesity. Weight-based discrimination is particularly experienced by women living with severe obesity, and by those working in customer facing roles. Findings highlight that this discrimination is experienced as a result of the social stigma regarding overweight and obesity, causing employers to seek employees who they believe will make their business more attractive (Vallejo-Torres et al., 2018).

Implications for productivity

In addition to the rising healthcare costs in Spain attributable to obesity within the population, the relationship between obesity and early exit from paid employment (as a result of loss of healthy life years) risks reducing economic output and increasing the costs associated with disability benefit (OECD, 2019).

In a review of obesity expenditure across countries in the OECD, findings suggest that all countries will experience a reduction in labour market output due to increasing rates of obesity and overweight. On average, across the 52 OECD nations:

- Absenteeism is reducing labour market output by 0.38 per cent per individual;
- Presenteeism is reducing labour market output by 0.81 per cent per individual;
- Overweight-related unemployment is reducing labour market output by 0.43 per cent.

These figures appear small, however they represent lost economic output on an individual and household level. Across the OECD, these figures equate to the loss of 54 million full-time employees, 28 million of which are lost directly due to the increased risk of unemployment experienced by people living with overweight and obesity. While the specific number of job losses in Spain are not disclosed within the data, it is estimated that the Spanish economy is reduced by 3 per cent, over €38bn, as a result of absenteeism, presenteeism and lost labour force participation (OECD, 2019). Despite these figures and the economic cost of increased BMI on the Spanish economy, little research and government policy has focussed on exploring and tackling the increasing direct and indirect costs attributable to obesity.

Studies carried out in a Spanish context have identified a relationship between obesity and early exit from employment through disability benefit, finding that living with overweight or obesity increases an individual's likelihood to begin claiming disability benefits (Robroek et al., 2013; van den Berg et al., 2010). International research, including Spanish data, has highlighted the decreased labour market output as a major cause for concern for all countries experiencing an increase in the prevalence of obesity, due to the cost this has to the economy (Robroek et al., 2013). These studies have also highlighted that people living with obesity are absent from work on sick leave more often than those without obesity, and typically have longer periods of sick leave (Sicras-Mainar et al., 2020; Vallejo-Torres et al., 2017).

Obesity, employment, and gender

While individuals living with obesity will generally experience higher levels of discrimination within their employment experiences, analyses exploring the intersection of obesity and gender have identified that women experience higher levels of discrimination within the hiring process and their employment period.

Studies conducted in national contexts from a number of countries have found that women experience higher levels of weight-based discrimination in employment than men. In Spain, Campos-Vaquez and Gonzalez (2019) carried out a project in which they sent over 3000 fictitious applications to almost 1700 job openings – attempting to send one application from an individual living with obesity and one from an individual with a 'normal' BMI to each opening – and found that women living with obesity were less likely to secure a call-back for a job than a woman of average weight.

- 29.1 per cent of women with a normal BMI were called back regarding their job application, compared to 21.1 per cent of women living with obesity.
- Women living with obesity would need to send 37 per cent more job applications than those not living with obesity in order to receive the same number of call-backs.
- If men were noted as the contact for employment, women with obesity were less likely to receive a call-back.
- There was no significant evidence suggesting males living with obesity experience employment discrimination.

Vallejo-Torres et al (2018), undertook research to understand whether perceived work discrimination due to weight was prevalent in Spain, using the European Health Interview Survey (EHIS) data. The results suggested that females living with severe obesity were more

likely than those who are of average weight to report discrimination at work. Interestingly the research also indicated that women living with severe obesity who live in regions where obesity prevalence is low, experienced more discrimination in the workplace. No evidence of an effect of obesity on perceived discrimination at work among males was found. The authors concluded that weight-discrimination in work settings in Spain was concentrated on women living with severe obesity, highlighting a gendered nature of obesity in the country. There was also some evidence to suggest that discrimination was greater for females living with obesity in more public-facing/customer-facing roles.

Studies using the same methodology have been conducted in Italy and China and have also found women were discriminated against more frequently than men throughout the recruitment process. Women appeared to be evaluated more negatively than men and were less likely to receive a call-back (Busetta et al., 2020; Gao, 2021).

These studies, alongside multiple other studies (see Table 1), have also identified that women experience a wage penalty if they are living with obesity which can persist between adolescence and adulthood. The wage penalty is a result of fewer employment opportunities, lower educational attainment, poorer general health, higher rates of part-time work, and higher rates of seasonal and precarious employment.

TABLE 1 - Wage penalty for working women – summary of estimates in a range of studies

Study	Estimated wage penalty for women (rounded)
Averett & Korenman (1999)	10-20%
Baum & Ford (2004)	2-5%
Cawley (2004)	0-9%
Caliendo & Gehrsitz (2016)	12%
Register & Williams (1990)	12%
Sabia & Rees (2012)	0-16%
Han, Norton & Stearns (2009)	12%
Geisel (2017)	7%
Lee et al (2019)	9%
Moro et al (2019)	8-11%
Pinkston (2015)	13%
Trombley et al (2018)	8%
Campos-Vasquez et al (2019)	14%
Larose et al (2016)	5%
Debeaumont & Nsaiah (2016)	6%
Brown & Routon (2017))	8-10%
Black et al (2016)	7-12%
Bozoyan & Wolbring (2018)	8%

Source: Bajorek and Bevan, 2020

With the available data, wage penalty calculations have been undertaken to provide an insight into the individual and collective losses for Spanish women of working age as a result of obesity discrimination in employment (see Table 2). Exploring four scenarios of varying wage penalty levels, our findings show a wider loss to individuals, families and the wider economy through spending power and tax revenues.

With the available data, wage penalty calculations have been undertaken to provide an insight into the individual and collective losses as a result of obesity discrimination in employment in Spain. Exploring four scenarios of varying wage penalty levels, findings show a huge loss to individuals, families and the wider economy through spending power and tax revenues.

TABLE 2 - Wage penalty for women in Spain – four scenarios**Baseline assumptions**

1. Average annual earnings for women in Spain: €22,467 ⁵
2. 11 million women in employment in Spain ⁶
3. 15.5% of women are living with obesity ⁷
4. 1.7 million working women living with obesity in Spain

Scenario one – a two per cent wage penalty

- A two per cent reduction in annual earnings for a woman living with obesity is €451
- A €451 wage penalty for all employed women in Spain living with obesity equates to a wage penalty of €766m each year

Scenario two – a five per cent wage penalty

- A five per cent reduction in annual earnings for a woman living with obesity is €1132
- A €1132 wage penalty for all employed women in Spain living with obesity equates to a wage penalty of €1.92bn each year

Scenario three – a nine per cent wage penalty

- A nine per cent reduction in annual earnings for a woman living with obesity is €2051
- A €2051 wage penalty for all employed women in Spain living with obesity equates to a wage penalty of €3.49bn each year

Scenario four – a 13 per cent wage penalty

- A 13 per cent reduction in annual earnings for a woman living with obesity is €2981
- A €2981 wage penalty for all employed women in Spain living with obesity equates to a wage penalty of €5.06bn each year

As noted earlier in this report, there is no evidence of similar studies being carried out in Spain. The detriment to the wider economy as a result of employment discrimination and the effects this has on individuals living with obesity, may require additional attention in Spain, especially if there is a wider priority to make the Spanish labour market more inclusive to people living with chronic and fluctuating health conditions.

As reported earlier in this report, there is an understandable concern about childhood obesity rates in Spain. While much of this concern comes from a public health perspective, IES has also examined the long-term earning effects of childhood obesity among young women. We have carried out some analysis (detailed in Annex 1) which seeks to estimate the impact of the wage penalty experienced during a career, assuming that an individual woman living with obesity leaves full-time education at 18 years.

The model suggests the following: a female living with obesity in Spain starting their career and employed every year, now suffers an annual obesity-related earnings penalty of:

- €1,714 at age 18 in 2022.
- €2,314 at age 30 in 2034.
- €2,676 at age 50 in 2054.
- €2,803 at age 64 in 2068.

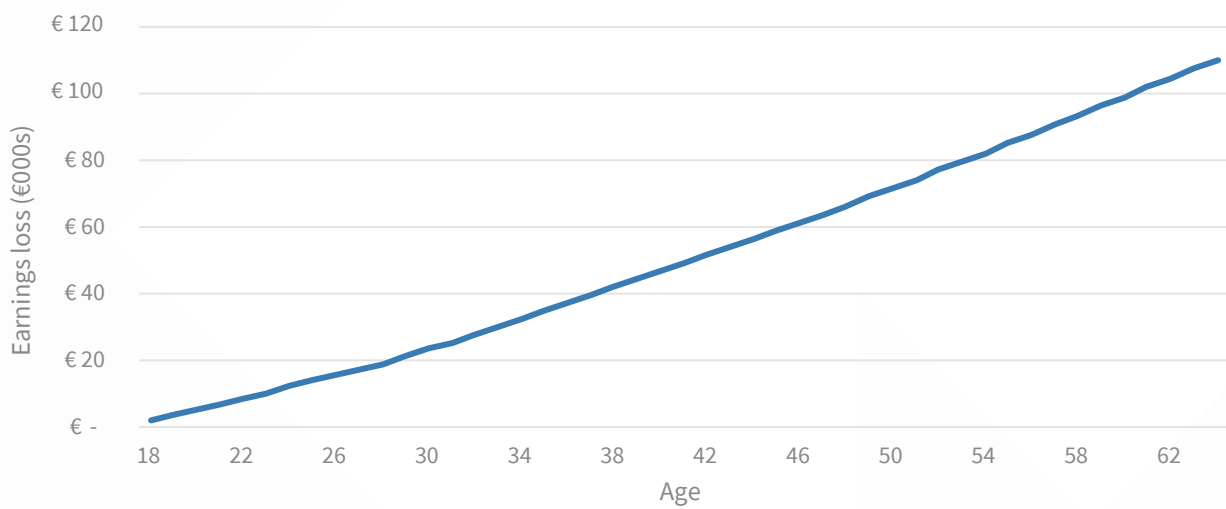
⁵ Instituto Nacional de Estadística: National results: Average annual earnings per worker data showing average wage for women

⁶ World Bank: Labour Force total and Labour Force, female (% of total labour force)

⁷ Instituto Nacional de Estadística: Obesity Spain and the EU 2020

Figure 1 depicts the cumulative earnings loss of an 18-year-old female living with obesity in Spain in 2022 across her career (assuming she is permanently in employment).

Figure 1. Cumulative impact on a woman’s career earnings of obesity wage penalty Over her career,



Over her career, the obesity-related earnings penalty she suffers results in a total earnings loss of approximately €110,000. When the annual obesity-related earnings penalties are aggregated across the period 2022–2068 (dropping the assumption of being permanently employed and instead introducing the assumption of a 60% female employment rate), this translates to an aggregate total earnings loss of €176bn across Spain. Some studies suggest that this wage penalty persists even if an individual reduces their BMI to ‘normal’ weight during their careers. This suggests that early intervention to support efforts which prevent or mitigate the effects of childhood obesity may have economic as well as public health benefits.

Although there has been an understandable focus on obesity as a public health priority in Spain, the evidence of widespread stigma and discrimination in both the labour market and in many workplaces suggests that employment and earnings outcomes for many Spanish people living with obesity could be improved with greater focus from a range of stakeholders. This is especially relevant if people living with obesity are to enjoy access to full, fulfilling and inclusive employment experiences.

Recommendations



Recommendations

We have recommendations for three groups of stakeholders, based on our research into obesity stigma and employment in Spain:

The Spanish government

- Employers in Spain might benefit from clear guidance from the government on the legal status of obesity discrimination in employment. If obesity itself is not to be included as a 'protected characteristic' under the definition contained in inequalities legislation, then clearer guidance could be made available to clarify which obesity-related conditions are included within its scope and what legal duties this implies for employers.
- Consideration might be given to help family doctors become more effective in handling occupational health issues related to obesity and related health conditions. This may need an input into their training.
- The Spanish government could, as part of any future obesity strategy, consider designating obesity as a disease and embedding the principle that work must be a priority clinical outcome of care, recognising the benefits of staying in, thriving in and returning sustainably to work.
- The Spanish government might consider providing enhanced support and guidance to healthcare professionals and employers on the support which can be given to people living with obesity whose work is affected either by a diagnosis of Covid-19 or so-called long Covid. This could be a priority from a clinical, economic and societal perspective. There may also be an opportunity to consider the career and wage consequences of childhood obesity, especially among young women living with obesity.
- All clinical trials of interventions which involve people living with obesity might benefit from routinely collecting data on the employment status of subjects. This could help fill an important data gap and allow employment outcomes to be tracked more effectively.

Spanish healthcare professionals

- Could be encouraged to identify where job retention or early return to work is good for patients, for whom obesity and related health conditions are causing sickness absence from work, or are associated with work-related impairments. It is easy to assume that work is bad for your patient, especially if you suspect that aspects of their job or the work environment makes their symptoms or their exposure to discrimination or bullying worse. Healthcare professionals could more often ask themselves whether helping an employee with obesity or related health issues to stay in or return to work is a positive clinical goal of treatment, referral or commissioning.
- Might consider thinking beyond the physical symptoms of obesity. Bring to bear an understanding of the biopsychosocial model and the limitations of the biomedical model in the diagnosis of the patient and – most importantly – the assessment of the role that their job might play in helping them stay active and avoid isolation.
- Healthcare professionals in primary care, for example, are ideally placed to identify the early presentation of many obesity-related health problems and any comorbid mental health issues. Where appropriate, they could provide appropriate support and seek to refer patients to specialist teams or support services as early as practicable, to enable the management of the condition to begin in ways which support continued working.
- Emphasis on the positive contributions that people living with obesity can make at work can support self-esteem and self-confidence. A patient can hold a very negative view of the causes, impact and likely consequences of their obesity and any related health conditions if the way that clinicians present it focuses on incapacity rather than capacity.

- Encourage self-management. Clinicians can help to ensure that the patient can adopt strategies to manage aspects of their own condition, especially if they are staying in or returning to work. A feeling of empowerment and control will help their mood and ensure that they can keep on top of important aspects of their health while at work.

Spanish employers

- Consider including obesity explicitly in your equalities, diversity and inclusion policies. This might mean that recruitment, progression and pay equity, together with access to workplace adjustments could be more open to all employees and that discrimination based on disability, health conditions or impairment related to obesity can be avoided.
- Reflect on whether any requirements for employees to comply with standards of appearance, personal 'grooming' or dress while at work could be interpreted as direct or indirect discrimination against employees living with obesity. This is especially, but not exclusively, relevant to female employees in customer-facing roles, where research suggests that such discrimination is most common.
- Consider reviewing any workplace health and wellbeing practices, or health promotion policies to ensure that these are supportive of, and not stigmatising towards, employees living with obesity. This may include the use of health risk assessments (HRAs) which collect data on BMI, cholesterol etc.
- Check whether any employer-sponsored weight-management, nutrition, exercise programmes and related initiatives are designed, implemented, and evaluated in conjunction with employees and that any risk of these interventions perpetuating weight-based stigma is minimised.
- Work towards encouraging safe and supported disclosure of work-limiting health conditions by employees, including those health conditions related to obesity and overweight. In doing so, employers can recognise that fear of stigma (and self-stigma) may inhibit some employees living with obesity to come forward. It is also important to recognise that depression or anxiety can also affect some people living with obesity, especially if they are living with pain (eg from osteoarthritis) or other symptoms (eg hypertension) and if they have been the subject of inappropriate or hurtful comments or discrimination from customers, clients or co-workers because of their weight or appearance.
- Imaginative job design or job crafting can assist job retention and rehabilitation for employees with health conditions associated with obesity and overweight. Managers can change the way work is organised (including simple changes to working time arrangements) to help prevent poor health getting worse and to help employees living with obesity to return to work after any absences from work (including those relating to Covid-19). They need to do this in a way which preserves job quality, avoids excessive or damaging job demands and takes heed of ergonomic good practice.

If the health of the Spanish working age population is to continue to be a priority for the government of Spain and to both the clinical and business community, it will be important that the challenges of growing rates of obesity are not just considered to be related to public health alone. Our research suggests that the poor employment outcomes of many Spanish people living with obesity may be going unnoticed and that, in a country where social inclusion and equality of opportunity are so highly prized, this is a situation which may benefit from further consideration and action on the part of key stakeholders.

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Annexe 1



Annex1 Estimating the career impact of the obesity wage penalty for women in Spain

Methodology

Estimates of the female population by age from age zero to 64 covering 2015 to 2020 was taken from the Instituto Nacional de Estadística (INE)⁸. Annual year-age cell-to-cell growth rates (eg, the change from 2016's 18-year-old population to 2017's 19-year-old population) were calculated and then used to project forwards each cell up to 2068. The zero-year-old population was calculated each year by using the ratio of zero-year-olds to reproductive-age females (15–49-year-olds) in 2022 and applying this to that years reproductive-age female population. The resulting population projections were sense checked. There is limited data providing population projections for Spain from reputable sources. The guardian (2016) referenced population projections by the INE that by 2050 the Spanish population would fall by 11 per cent. Comparing out 2050 projected working-age female population to the 2016 working-age female population reported by the INE shows a fall in the population by 12 per cent, suggesting that our crude projections are well within the ballpark of reasonable.

Obesity rates from 2020 by age group were also taken from the INE⁹. We projected these rates forwards using projections of the proportion of individuals under 20 who live with overweight or obese (defined as being more than one standard deviation above the WHO's estimated average weight) spanning 2020–2060 from the Global Obesity Observatory¹⁰. We then applied the female obesity rates by age group by year to the projected female population by age by year to get projections of the female population living with obesity by age by year and by age group by year.

Mean gross annual earnings by age group for women in 2018 was taken from the EU Labour Force Survey data on Eurostat¹¹. These figures were projected forwards by assuming an annual nominal wage growth rate of 0.3 per cent - the average annual wage growth rate in Spain across 1990–2021¹². The literature suggests that women living with obesity suffer an earnings penalty of nine per cent. Using this, the difference in average earnings of obese and non-obese individuals for each year. We assume that the employment rate of working age women in Spain will be 60 per cent over the period of interest, based on employment rate data for 20–64-year-olds spanning 2009–21 which is also from Eurostat¹³. From these data, we calculate the cumulative impact of the obesity earnings penalty for a 2022 18-year-old female living with obesity, as well as the aggregate impact of obesity on earnings across the entire working population of women living with obesity in Spain and split by age groups up to 2068.

Findings

A female living with obesity in Spain starting their career and employed every year, now suffers an annual obesity-related earnings penalty of:

- €1,714 at age 18 in 2022.
- €2,676 at age 50 in 2054.
- €2,314 at age 30 in 2034.
- €2,803 at age 64 in 2068.

Figure 1 depicts the cumulative earnings loss of an 18-year-old female living with obesity in Spain in 2022 across her career (assuming she is permanently in employment). Over her career, the obesity-related earnings penalty she suffers results in a total earnings loss of approximately €110,000. When the annual obesity-related earnings penalties are aggregated across the period 2022–2068 (dropping the assumption of being permanently employed and instead introducing the assumption of a 60% female employment rate), this translates to an aggregate total earnings loss of €176bn across Spain.

⁸ <https://www.ine.es/jaxiT3/Tabla.htm?t=31304>

⁹ https://www.ine.es/en/infografias/infografia_dia_obesidad_en.pdf

¹⁰ <https://data.worldobesity.org/economic-impact-new/countries/#ES>

¹¹ https://ec.europa.eu/eurostat/databrowser/view/EARN_SES18_27_custom_3440718/default/table?lang=en

¹² <https://data.oecd.org/earnwage/average-wages.html>

¹³ https://ec.europa.eu/eurostat/databrowser/view/LFSI_EMP_A_custom_3543388/default/table?lang=en

Figure 1. Cumulative impact on a woman’s career earnings of obesity wage penalty

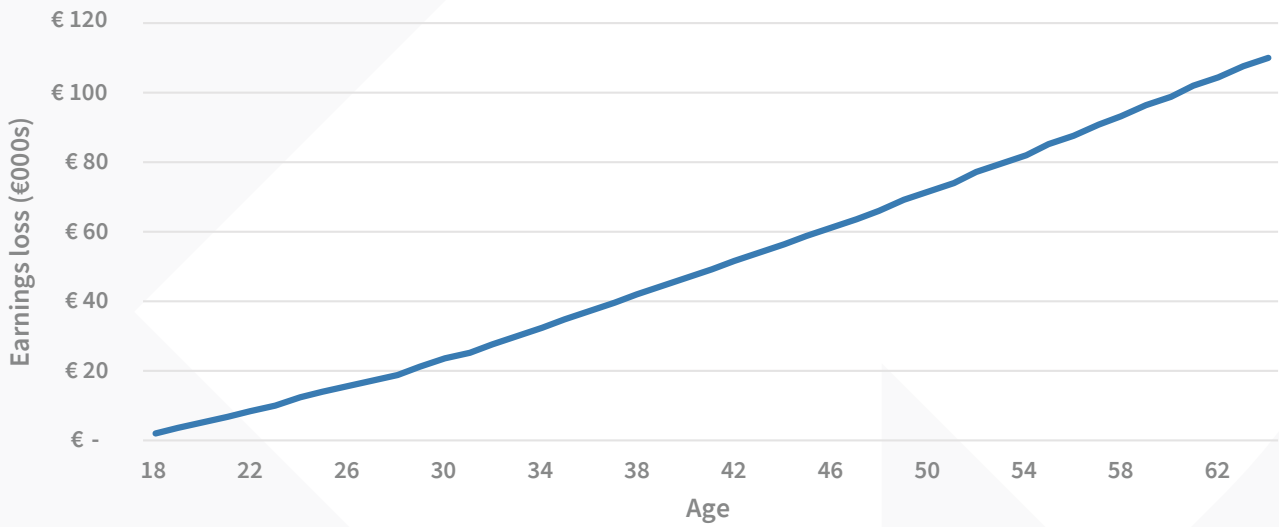
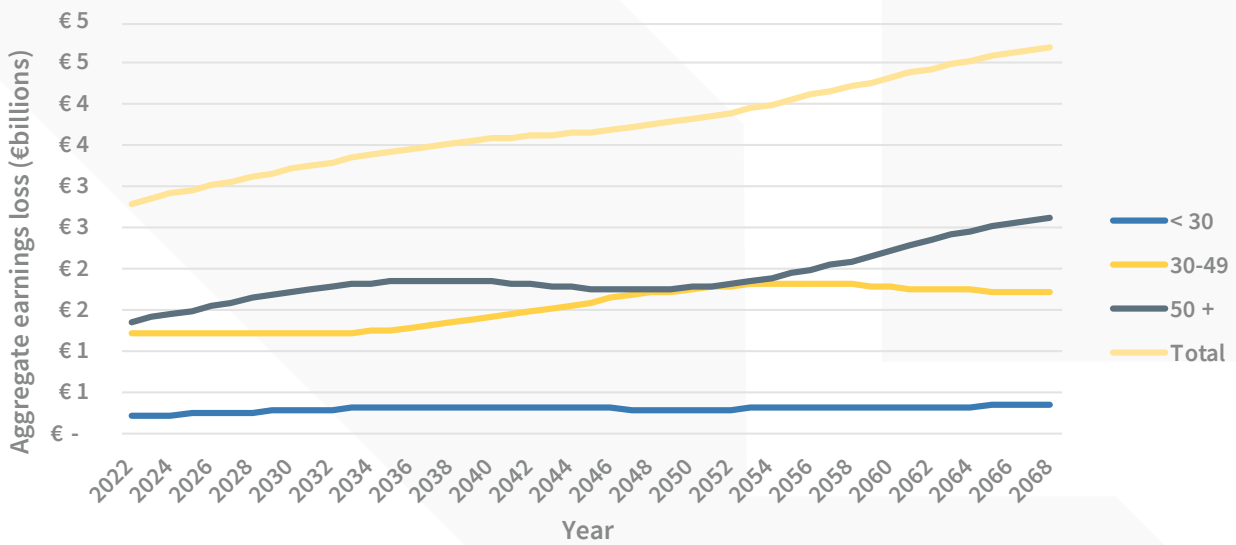


Figure 2 shows the annual aggregate earnings loss due to the obesity wage penalty across this period, split by age group.

Figure 2. Annual aggregate earnings loss due to obesity wage penalty



The largest aggregate effect is felt among the age 50 and over population, due to them having the highest average earnings and thus highest individual earnings penalty, as well as containing the largest number of individuals living with obesity for the majority of the period.

We consider how sensitive our results are to adjusting some of our inputs. Decreasing the earnings penalty from nine per cent to five per cent, decreases the total earnings loss of a female living with obesity and the aggregate total earnings loss from €110,000 to €60,000 and from €176bn to €97bn respectively, while increasing it to 13 per cent increases these figures to approximately €160,000 and €256bn respectively. Keeping the earnings penalty at nine per cent, reducing the assumed nominal wage growth rate to zero per cent, decreases the total earnings loss of an obese female and the aggregate total earnings loss from €110,000 to €101,000 and from €176bn to €161bn respectively, while increasing it to 1.53 per cent (a historical wage growth rate figure from Trading Economics covering 1978-2022¹⁴) increases these figures to approximately €158,000 and €253bn respectively.

¹⁴ <https://tradingeconomics.com/spain/wage-growth>

Assumptions

In the above analysis, given the limitations of the data available and the nature of making future projections, we were required to make various assumptions. Below is a list of the main, although not all of the assumptions we make, either explicitly or implicitly in our projections. First, regarding our overall population projects:

- We forecast the total future female population from cell-to-cell, exploiting the fact that an 18-year-old in 2022 will be a 19-year-old in 2023, therefore the population across cells over time should be fairly predictable. However, this assumes that entry and exit rates at the sides of the population due to eg, migration and deaths, will remain stable, which may well not be the case – we are for instance forecasting an increase in obesity rates which will likely directly affect death rates.
- To construct the zero-year-old population we calculate a quasi-fertility rate for 2022 and then apply this forwards. This assumed that the quasi-fertility rate moving forwards will remain stable, although it is well known that fertility rates in the west have been generally declining in recent decades, and this is even the case with our quasi-fertility rate in the Spanish data covering 2015–2020, although looking at data from the World Bank it appears that Spain's Total Fertility Rate now appears to have stabilised around 1.2–1.4¹⁵, so this assumption may well be justified when considering a longer time period as opposed to a five-year span.

Regarding obesity rates:

- We assume that we can evenly apply the age group rates to all ages within said groups. In reality however, the distribution of obesity rates across ages will follow a curve as opposed to moving in steps, therefore this may reduce the representativeness of results.
- The obesity definition we use to project forward the obese population by age is narrower than the obesity definition used in the Global Obesity Observatory's overall obesity projections, which is closer to a definition of overweight. Therefore, we are assuming that obesity rates will evolve in a similar fashion to overweightness rates.
- We assume that obesity rates by age group will evolve evenly, which we are forced to do given we have only one datapoint on obesity rate projections for Spain. This may not be the case however – obesity rates among younger women likely may increase faster than obesity rates among older women.

Regarding the employment rate:

- We make the assumption that over the long term the female employment rate will be 60 per cent. This is based on historical rates, and so may not be representative across our period of interest - there may be changes to maternity leave policy or the availability of childcare for instance which will affect the natural rate of employment of women in Spain.
- Additionally, the 60 per cent figure is based on data concerning the 20–64-year-old population. As such, this figure does not include 18–19-year-olds, affecting the applicability of this figure to our population of interest, which does include 18–19-year-olds.
- We apply the 60 per cent figure evenly across all age groups. However, the employment rate will vary by age group.

Regarding earnings projections:

- We assume that we can evenly apply the age group earnings figures to all ages within said groups. In reality however, the distribution of earnings across ages will follow a curve, as opposed to moving in steps, therefore this may reduce the representativeness of results.
- The earnings figures are grouped by age as follows: under 30, 30–49 and over 50. However, we apply these figures to just the working age population (18–64), therefore the figures for the top

¹⁵ <https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=ES>

and bottom groups will cover individuals outside of those we are interested in (ie, those under 18 and those over 64) which may affect their applicability.

- We base our nominal wage growth rate assumption on historical data, because there is limited quality data available on long-term projections of wage growth in Spain. We are therefore assuming that this historical average rate will continue into the future. This may well not be the case, which given the significant impact that adjusting the assumed wage growth rate has on the results is a significant source of uncertainty.
- We apply an earnings growth rate from the total population to the female working-age population. The historical and future earnings growth rates of both women and the working age population may however differ to those of the whole population.
- We assume that earnings across the different age groups will grow at the same rate, given a lack of data on historical growth rates across the earnings distribution. However, this may not be the case – the Lakner-Milanovic curve (aka the Elephant graph) shows that global wage growth rates have historically not been even across the earnings distribution, and they are likely not across the age distribution.
- We assume that the earnings penalty from obesity will remain constant at nine per cent over time. However, as the proportion of the population living with obesity increases, attitudes relating to obesity change; it becomes more difficult to discriminate against a minority group, as said group becomes less of a minority.

Potential improvements

There are several improvements that could be made to these projections, were more time and resources to be dedicated to the work:

- We project the zero-year-old population by using the quasi-fertility rate for 2022 and applying this over subsequent years. For this exercise, we do not model a falling quasi-fertility rate over time, because were we to base it on the year-to-year change and change-in-changes from the 2015–2020 data, the quasi-fertility rate would tend to be negative within the period we are considering (up to 2068) which is naturally unfeasible. Incorporating a time-varying fertility rate into the projections would require more time and thought.
- There are improvements to be made in how we forecast earnings over time. We could make assumptions about the difference in growth rates across the earnings distribution by using data from similar economies for which data is available. We could also make the growth rates time varying, by incorporating some wage growth rate forecasts for similar economies into our projections.
- We could incorporate time variation into the obesity-related earning penalty, perhaps by making it a function of the proportion of the population that is living with obesity.
- The increasing obesity rate could be incorporated into the cell-to-cell population projections given that it will likely affect death rates.
- Smoothing could be applied to the categorical datapoints that we have from curved distributions, namely the age group-based obesity rates and earnings figures.
- We apply the assumed employment rate evenly across all groups – we do this due to a lack of easily available data on employment rates by age group for women, however with more time and resources, specific employment rates could be derived for the age groups which we base our projections on.