

# THE BURDEN OF OBESITY IN BELGIUM

Prevalence, trends and costs



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# Background

- Serious public health problem
  - Heavy burden for society as a whole (substantial direct and indirect costs that put a considerable strain on healthcare and social resources)
  - Increased risk of chronic diseases (cardiovascular disease, type-2 diabetes, hypertension, coronary heart diseases and certain cancers), psychological problems
  - In 2019, excess weight was one of the top three risk factors in terms of attributable death and disability-adjusted life years (DALYs)

# Definition of obesity

## BMI classification (WHO)

BMI	Definition
< 18,5	Underweight
18,5 – 24,9	Normal weight
25,0 – 29,9	Overweight
≥ 30,0	Obesity

BMI = Body Mass Index, the most widely used indicator to calculate in a simple way the relative body weight among adults (18+ years)

➔ kg/m<sup>2</sup>

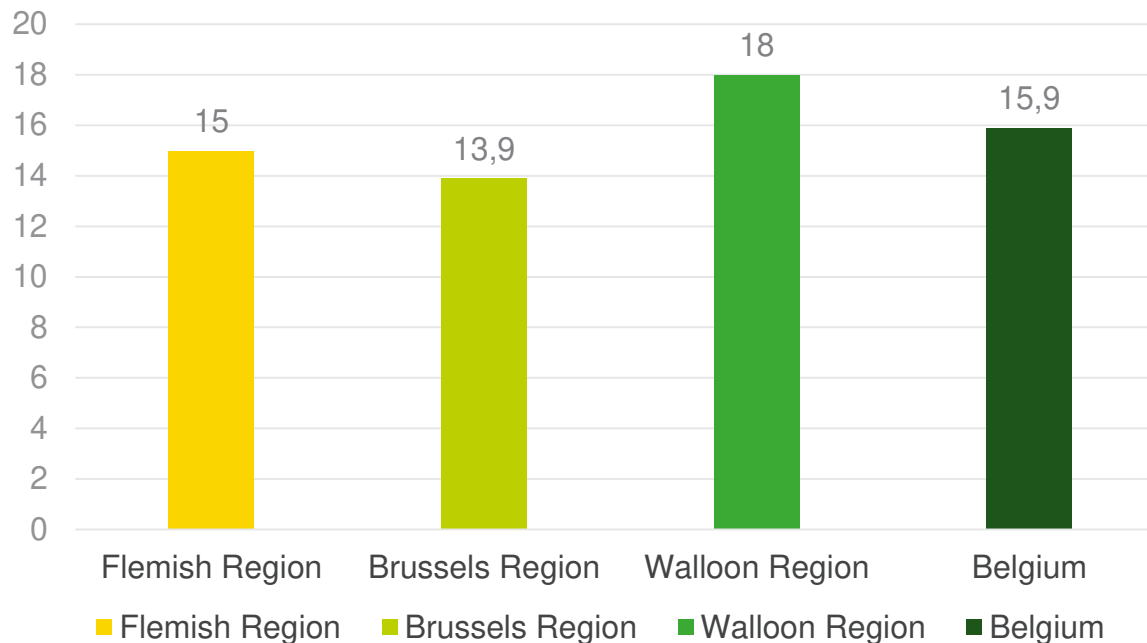
To assess the prevalence of overweight and obesity among children and adolescents (2-17 years) specific cut-off points\* needs to be applied

\* Recommended by the 'International Obesity Task Force'

# Situation in Belgium (HIS 2018)

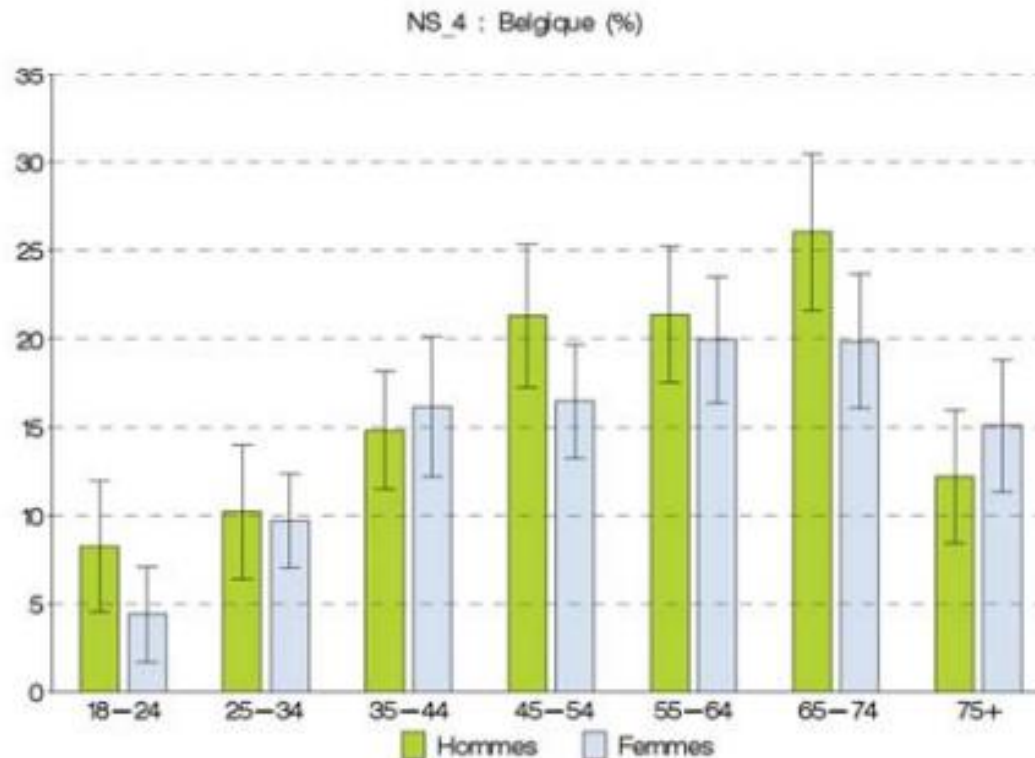
- Almost half (49,3%) of the adult population (18+) in Belgium suffers from overweight (BMI  $\geq 25$ ); 15,9% suffers from obesity (BMI  $\geq 30$ )
- The obesity prevalence differs significantly by region

Obesity prevalence by region



# Situation in Belgium (HIS 2018)

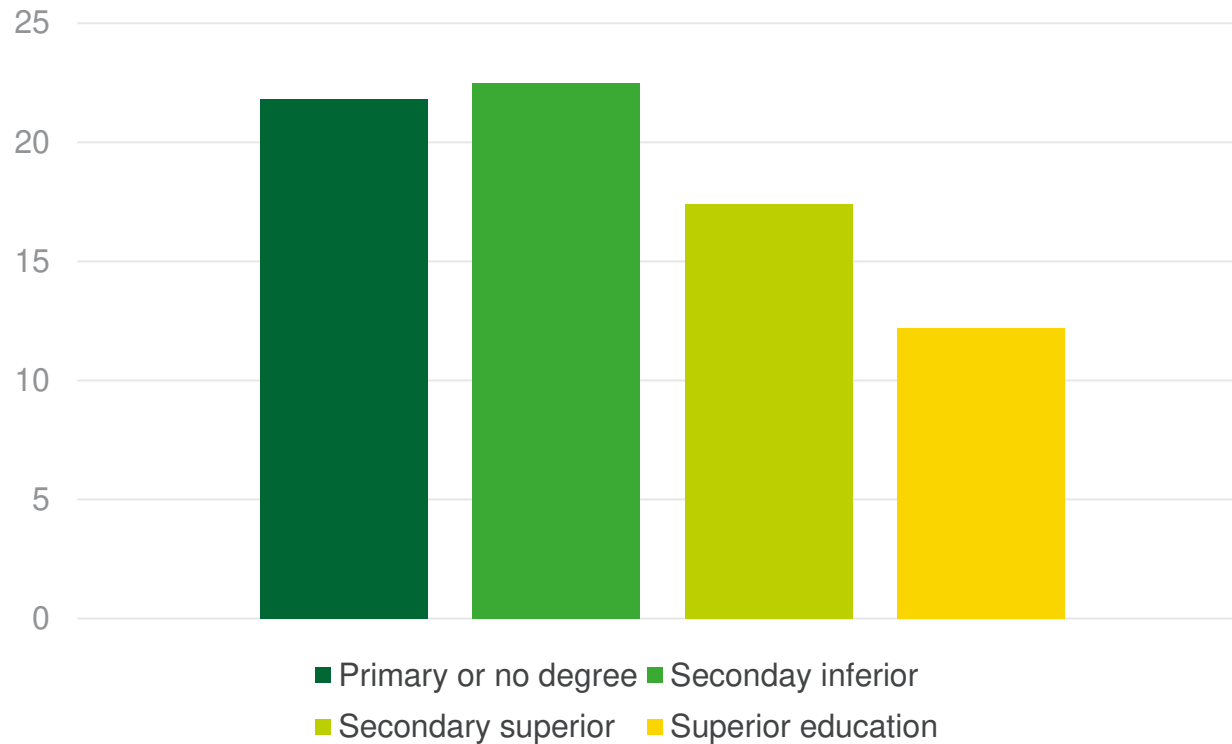
- The obesity prevalence does not significantly differ by sex (men: 16,7% vs. women: 15,0%), but it does by age: increases until 65-74 years (22,8%) and then decreases again until 13,9% among people of 75+



# Situation in Belgium (HIS 2018)

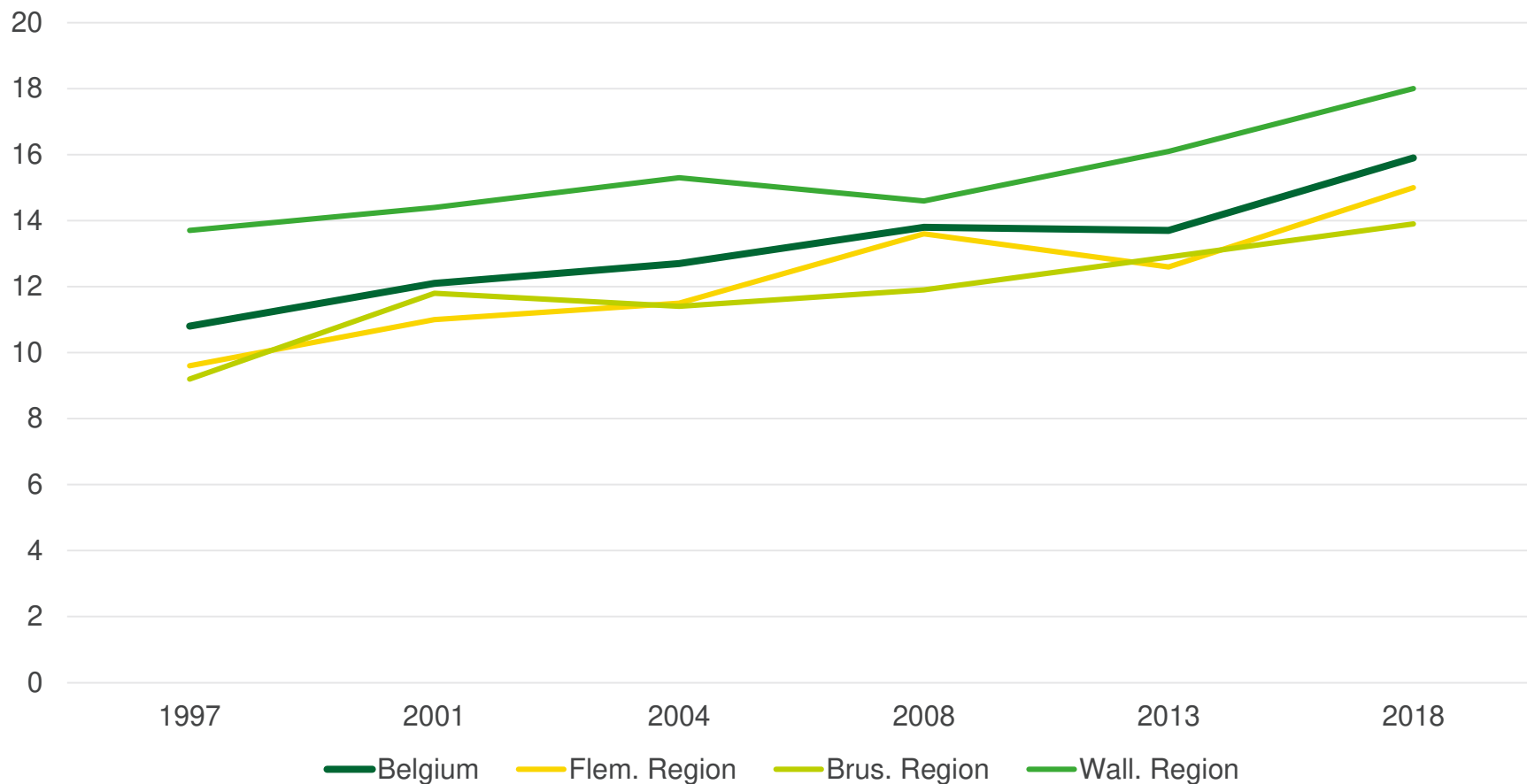
- The obesity prevalence is significantly lower among the highest educated people

Obesity prevalence by educational level



# Situation in Belgium (HIS 2018)

Evolution of the obesity prevalence among adults (18+)



# Situation in Belgium (HIS 2018)

These results can be found:

- in the report on 'Nutritional status':

[https://www.sciensano.be/sites/default/files/ns\\_report\\_2018\\_fr\\_v3.pdf](https://www.sciensano.be/sites/default/files/ns_report_2018_fr_v3.pdf)

- On our interactive website HISIA:

<https://hisia.sciensano.be/>

- On the website 'Belgique en bonne santé'

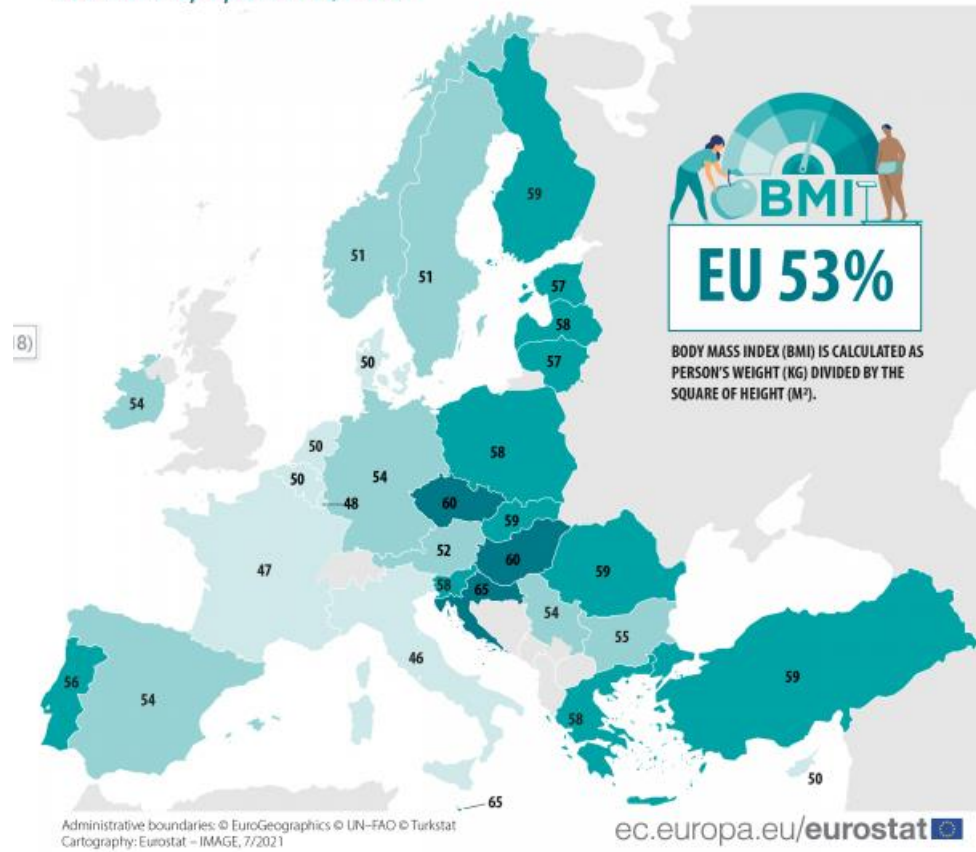
<https://www.belgiqueenbonnesante.be/fr/etat-de-sante/determinants-de-sante/statut-ponderal>



# Overweight in the EU

## Overweight population (BMI ≥ 25)

% of adult population, 2019



# Biased self-reported BMI (1)

## Study:

 **BMC** Part of Springer Nature



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## Correction of self-reported BMI based on objective measurements: a Belgian experience

[S. Drieskens](#) , [S. Demarest](#), [S. Bel](#), [K. De Ridder](#) & [J. Tafforeau](#)

[Archives of Public Health](#) **76**, Article number: 10 (2018) | [Cite this article](#)

**3593** Accesses | **15** Citations | **10** Altmetric | [Metrics](#)

## Background:

- Self-reported height and weight  underestimation of actual BMI

## Aim:

- Adjustment of self-reported BMI of HIS 2013 based on measured and self-reported BMI from FCS 2014

# Biased self-reported BMI (2)

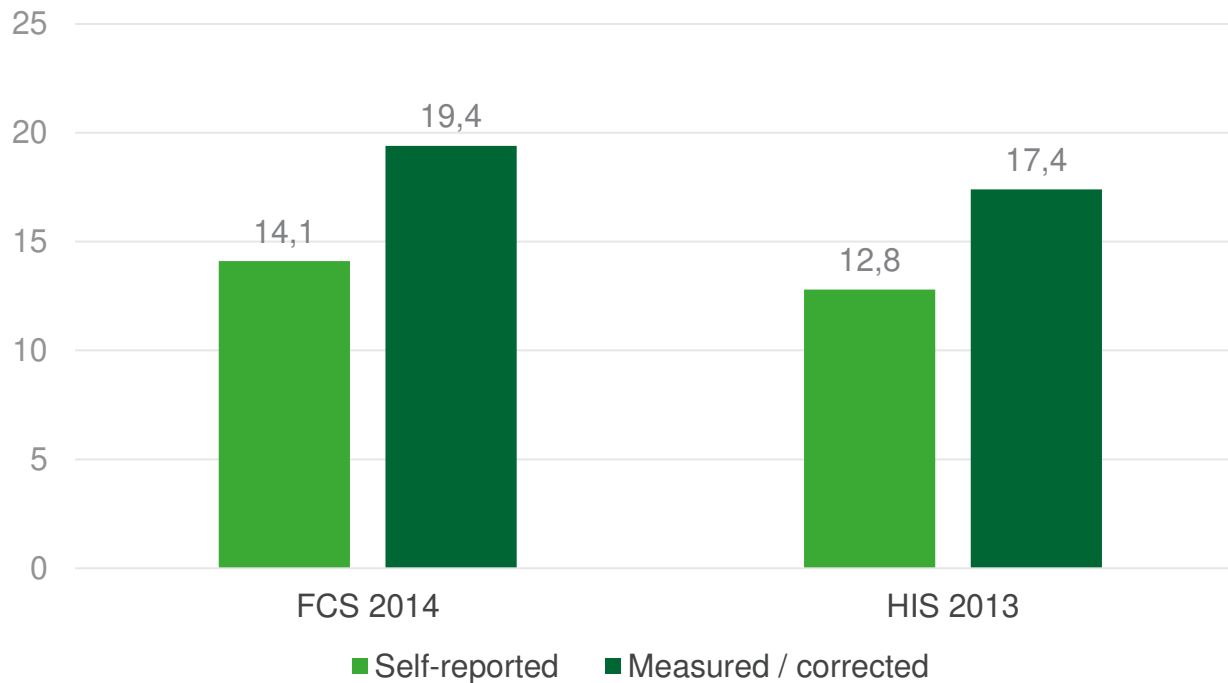
## Methods:

- HIS 2013 and FCS 2014 are cross-sectional surveys based on representative population sample
- This study focused on adults aged 18-64 years
- Measured and self-reported BMI of FCS used to assess misreporting  
→ Correction factors = measured BMI/self-reported BMI
- Corrected BMI of HIS =  
correction factor FCS \* self-reported BMI of HIS

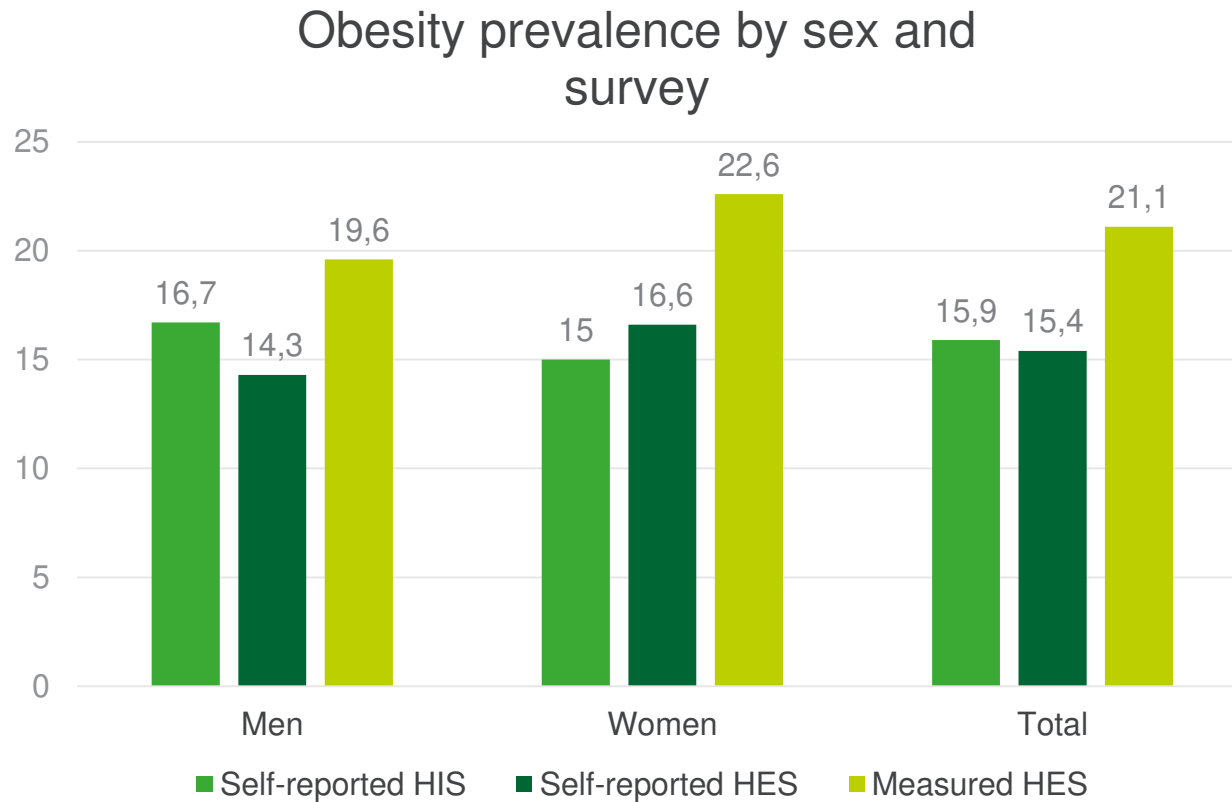
# Biased self-reported BMI (3)

## Results:

Obesity prevalence in 2013 by survey and type of registration



# Obesity prevalence: HIS versus HES 2018



# Impact of COVID-19 confinement measures (1)

Study:

Drieskens et al. *Archives of Public Health* (2021) 79:22  
<https://doi.org/10.1186/s13690-021-00542-2>

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## Short-term impact of the COVID-19 confinement measures on health behaviours and weight gain among adults in Belgium



Sabine Drieskens<sup>1\*</sup>, Nicolas Berger<sup>1,2</sup>, Stefanie Vandevijvere<sup>1</sup>, Lydia Gisle<sup>1,3</sup>, Elise Braekman<sup>1</sup>, Rana Charafeddine<sup>1</sup>, Karin De Ridder<sup>1</sup> and Stefaan Demarest<sup>1,3</sup>

## Background:

- The measures may affect health behaviours such as eating habits and physical activity
- This can lead to weight gain resulting in overweight and obesity
- Which is a risk of several chronic diseases, but also of severe COVID-19

# Impact of COVID-19 confinement measures (2)

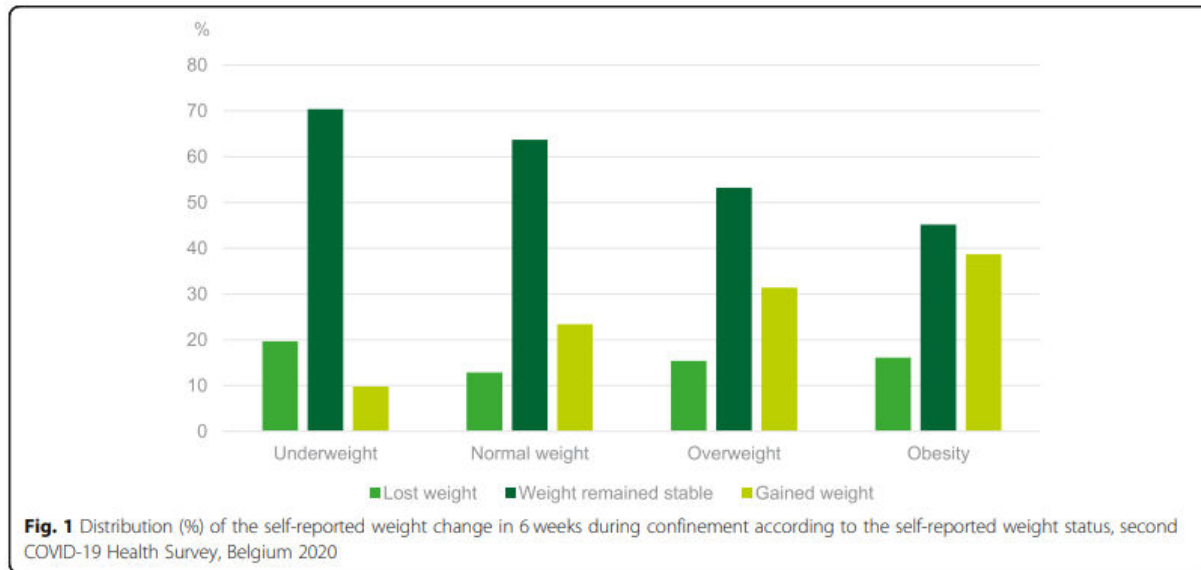
## Methods:

- 10 online COVID-19 Health Surveys were organized by Sciensano among Belgian residents (18+) via snowball sampling
- This study is based on the 2<sup>nd</sup> survey (16-23 April 2020)
- Study sample: 28.029
- Assess:
  - Obesity prevalence after 6 weeks confinement
  - Risk of weight gain by BMI-category
  - Association (OR) between self-reported weight gain and health behaviour changes calculated with logistic regression models

# Impact of COVID-19 confinement measures (3)

**Results:** 6 weeks after confinement (April 2020)...

- Obesity prevalence: 18,6% (sign. higher than in HIS 2018)
- 28,6% of the adults reported weight gain
- Persons who already suffered from overweight or obesity reported weight gain more frequently: see figure





# Impact of COVID-19 confinement measures (4)

## Results:

Higher odds of weight gain were observed among participants who

- increased their consumption of sweet or salty snacks  
OR = 3,65 (3,27 – 4,07)
- became less physically active  
OR = 1,91 (1,71 – 2,13)
- increased their alcohol consumption  
OR = 1,86 (1,66 – 2,08)
- increased their consumption of sugar-sweetened beverages  
OR = 1,39 (1,15 – 1,68)

# Impact of COVID-19 confinement measures (4)

## Conclusions:

Confinement and other COVID-19 related restrictions substantially altered the social, physical and economic environments in which people lived, which resulting in a modification of health behaviours for many.

While some people had the social, economic and educational resources to make healthier (food) choices, other people adopted less healthy (food) behaviours and gained weight as a result.

# Future trends (1)

Study:

De Pauw et al. *BMC Public Health* (2022) 22:1309  
<https://doi.org/10.1186/s12889-022-13685-w>

BMC Public Health

RESEARCH

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## Past, present, and future trends of overweight and obesity in Belgium using Bayesian age-period-cohort models



Robby De Pauw<sup>1,2\*</sup>, Manu Claessens<sup>1</sup>, Vanessa Gorasso<sup>1,3</sup>, Sabine Drieskens<sup>1</sup>, Christel Faes<sup>4</sup> and Brecht Devleeschauwer<sup>1,5</sup>

An aim of this study:

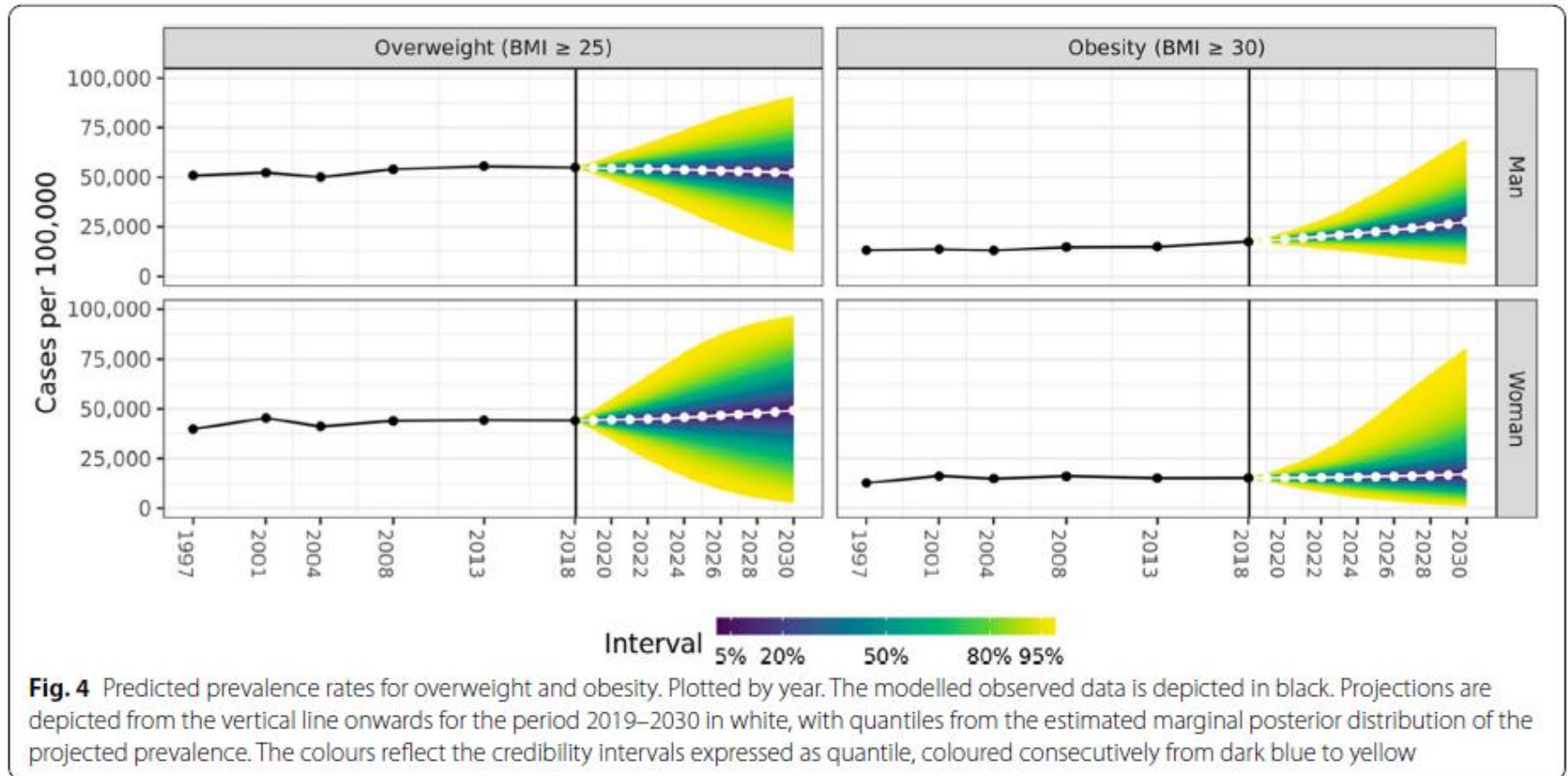
- To project the prevalence of overweight and obesity to the year 2030

Method:

- Projections were estimated with a Bayesian hierarchical APC model

# Future trends (2)

## Results:



**Fig. 4** Predicted prevalence rates for overweight and obesity. Plotted by year. The modelled observed data is depicted in black. Projections are depicted from the vertical line onwards for the period 2019–2030 in white, with quantiles from the estimated marginal posterior distribution of the projected prevalence. The colours reflect the credibility intervals expressed as quantile, coloured consecutively from dark blue to yellow


# Costs of obesity in Belgium

- Data sources : HIS 2013 + IMA-AIM (HISlink 2013)
- Estimation of direct and indirect costs

Gorasso et al. *BMC Public Health* (2022) 22:1693  
<https://doi.org/10.1186/s12889-022-14105-9>

BMC Public Health

RESEARCH Open Access

Health care costs and lost productivity costs related to excess weight in Belgium 

Vanessa Gorasso<sup>1,2\*†</sup>, Isabelle Moyersoën<sup>1†</sup>, Johan Van der Heyden<sup>1</sup>, Karin De Ridder<sup>1</sup>, Stefanie Vandevijvere<sup>1</sup>, Stijn Vansteelandt<sup>3,4</sup>, Delphine De Smedt<sup>2</sup> and Brecht Devleeschauwer<sup>1,5</sup>

# Estimation of attributable costs (1)

- Direct costs
  - Ambulatory care
  - Hospital care
  - Reimbursed medicines
- Indirect costs
  - Cost for days absent from work
  - Info on absenteeism in HIS
- Costs by BMC categories

# Estimation of attributable costs (2)

To estimate costs attributable to obesity:

## Recycled predictions

- **Multivariable regressions with negative binomial distribution and log link**

Average healthcare costs ~ BMI category + Age + Sex + ...


- **Predict healthcare costs** for each individual using the **observed BMI category**
- **Predict healthcare costs** for each individual in a scenario where **everyone is normal weight**, keeping all other characteristics as observed
- Calculate the **individual incremental cost of excess weight as the difference of an individuals' predicted costs** in the two above-described scenarios

$\text{Predict}(\text{BMI category}[\text{as observed}]) - \text{Predict}(\text{BMI category}[\text{normal weight}]) = \text{Attributable cost of excess weight}$

# Attributable costs

- Direct costs

- Yearly incremental cost estimated to be on average **€854** per capita for people affected by obesity

 Total yearly incremental cost at national level around **€2 698 190 204**

- Indirect costs

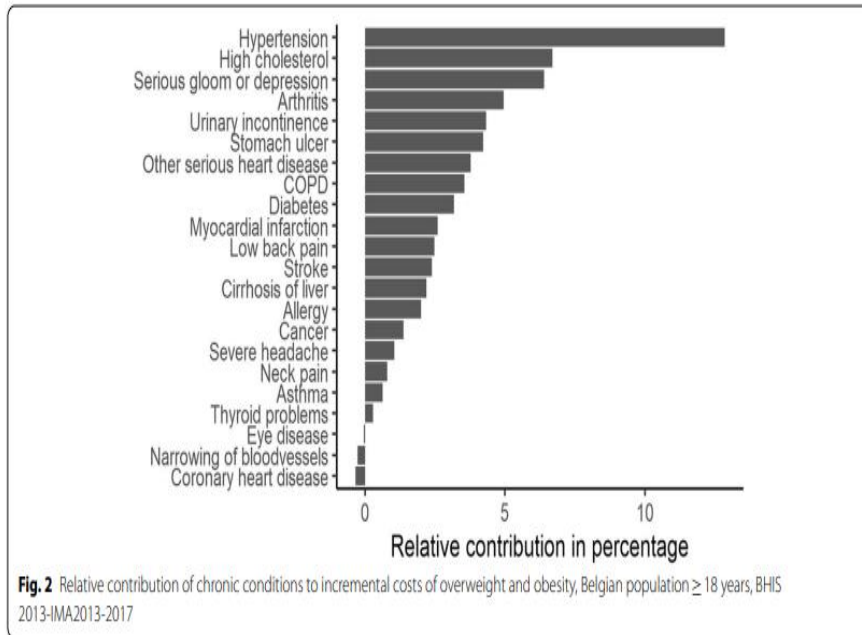
- Yearly incremental cost for absenteeism estimated to be on average **€2054** per capita for people leaving with obesity

 The loss of productivity represents an additional cost to society of **€ 889 469 387** in the obese population



# Which chronic diseases contribute most to these costs?

## Direct costs



## Indirect costs

- Arthritis, including rheumatoid arthritis and osteoarthritis (10%)
- Hypertension (5,5%)
- Low back pain (5,3%)

Source: Gorasso et al. *BMC Public Health* (2022) 22:1693

# Conclusions/Risk factors

In recent decades, food intake has increased and daily physical activity has decreased (more sedentary behaviour due to industrialization and other technologic aspects) with weight gain in the population as a result

The population should not see overweight as the new norm, but should be aware that it is a serious problem for health (cardiovascular diseases, diabetes type 2 and some cancers)

To combat obesity, an adjustment of both food intake and physical activity is required

# Conclusions/Actions (1)

- The WHO target to halt obesity by 2025 will most likely not be achieved
  - Multi-faced approach is necessary:
    - Policy guidelines and legislation that focusses on prevention
    - Effective treatments for people with overweight and obesity
- Main pillar = **prevention**, which should already start in childhood and early adolescence
  - ➔ Health promotion in schools:
    - Health promotion at school to reach the children of all SE groups
    - Offering healthy snacks and meals
    - Affordable meals at school
    - Sufficient levels of physical activity

## Conclusions/Actions (2)

- Main pillar = **prevention**, which should already start in childhood and early adolescence
  - ➔ Prioritized food environment policies
    - Health promotion / awareness campaigns are necessary, i.e. halve meat and sugar consumption and double the consumption of vegetables, fruits, nuts and pulses
    - Policy measures, such as taxes (sugar tax and fat tax)
    - Directions to the food industry regarding energy-rich food products
    - Protect children and adolescents against marketing
    - Nutri-score on packaging to inform people
  - ➔ Implement policies that target low SE groups (more at risk)

## Conclusions/Actions (3)

- Main pillar = **prevention**, which should already start in childhood and early adolescence
  - ➔ Individual level
    - keep good dietary habits (fresh fruits and vegetables, whole grains,.. hydration by water)
    - Stay active: use bike instead of car, stairs instead of elevator,... to stimulate physical activity
- **Treatment**
  - Improve the access to health care for weight management and behavioural therapy to change eating habits and physical activity

## Contact

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