

# Impactos da Transição Nutricional na Saúde Humana

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LÍCIO A. VELLOSO

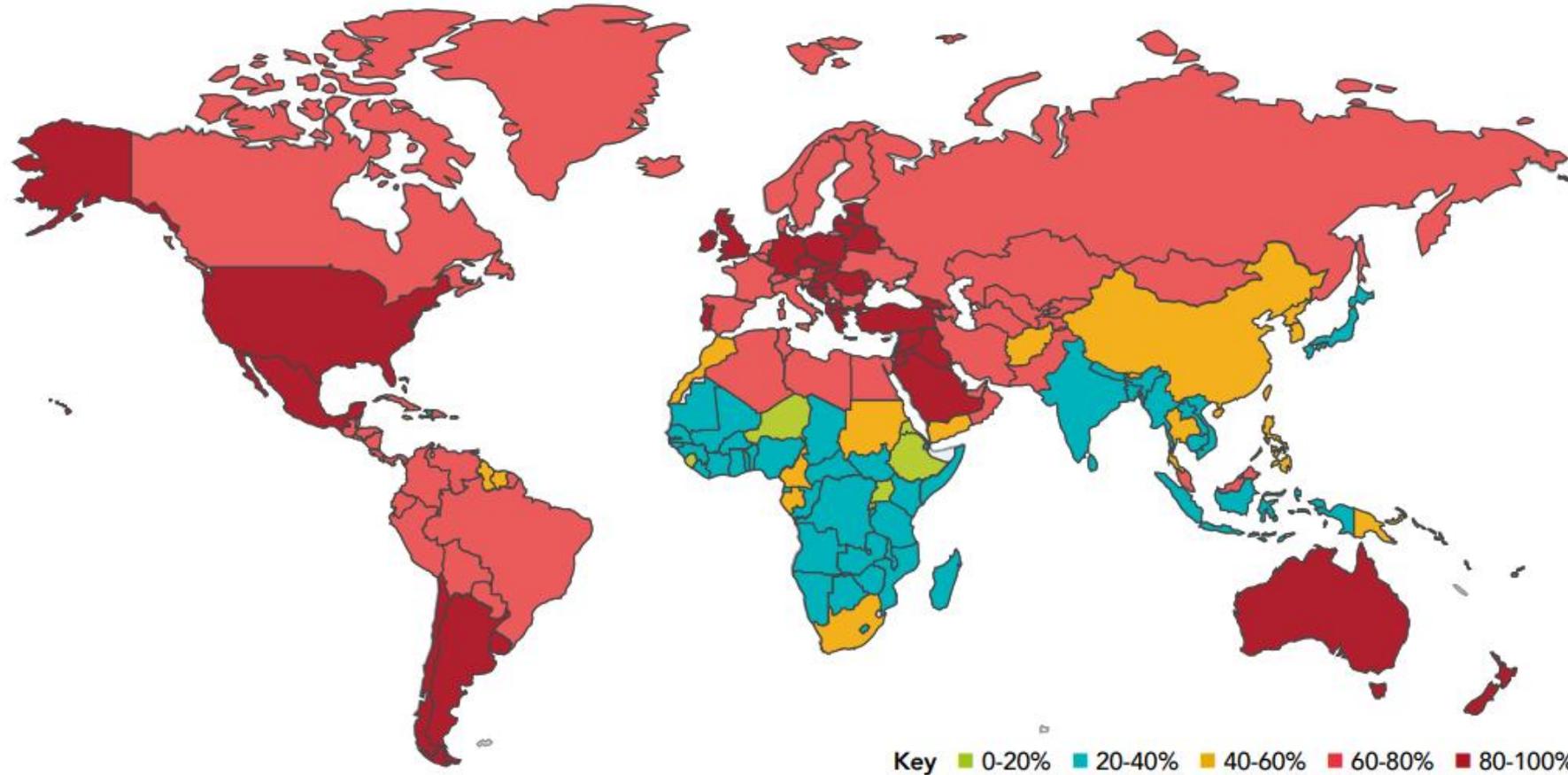
*CENTRO DE PESQUISA EM OBESIDADE E COMORBIDADES  
FACULDADE DE CIÊNCIAS MÉDICAS  
UNIVERSIDADE ESTADUAL DE CAMPINAS*

# Obesidade: um problema de saúde pública em todo o mundo

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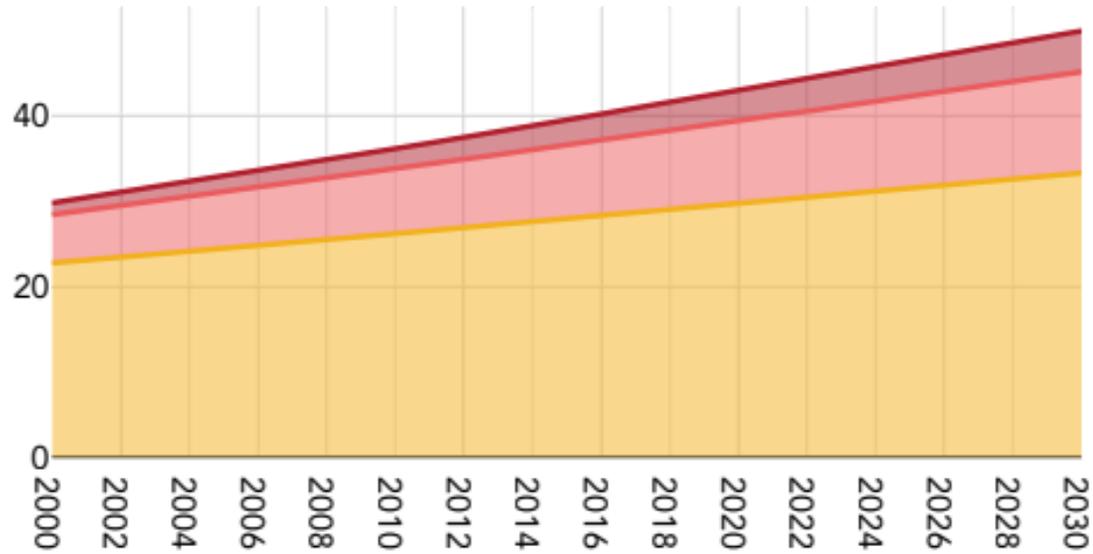
PARTE 1

# Obesidade e Sobrepeso no Mundo

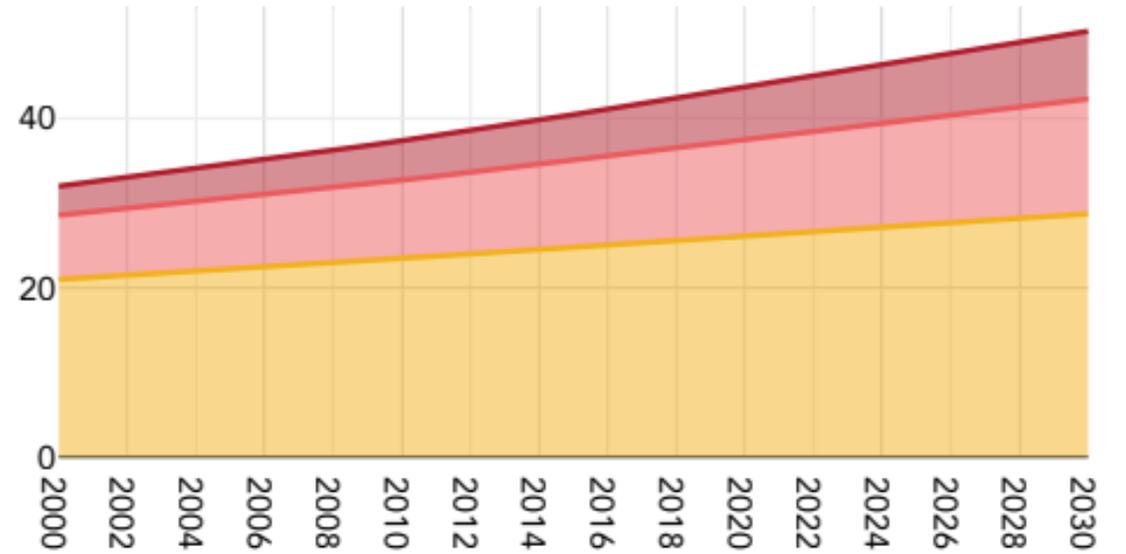


Source: World Obesity Federation analyses of NCD-RisC (2024) data for 2022

## Men



## Women



**Key** ■ BMI 25<-30 kg/m<sup>2</sup> ■ BMI 30<-35 kg/m<sup>2</sup> ■ BMI 35+ kg/m<sup>2</sup>

Source: NCD-RisC (2024) and World Obesity Federation projections

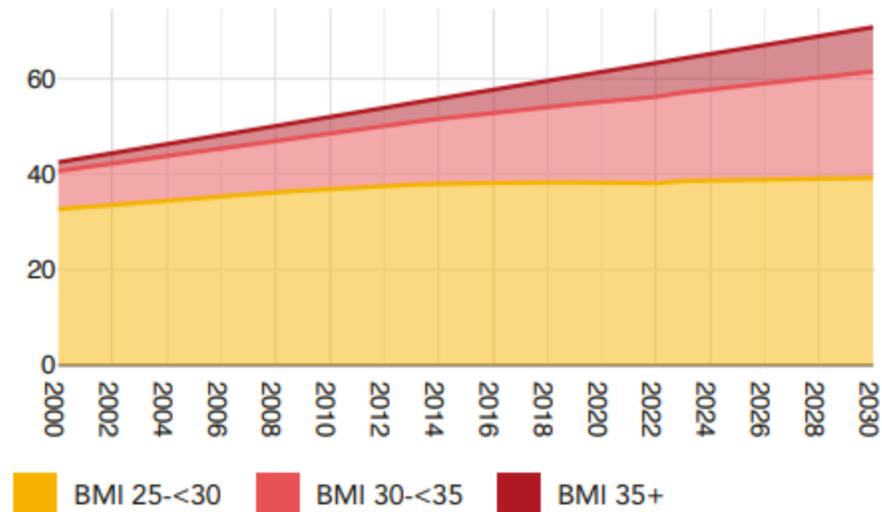


# Brazil

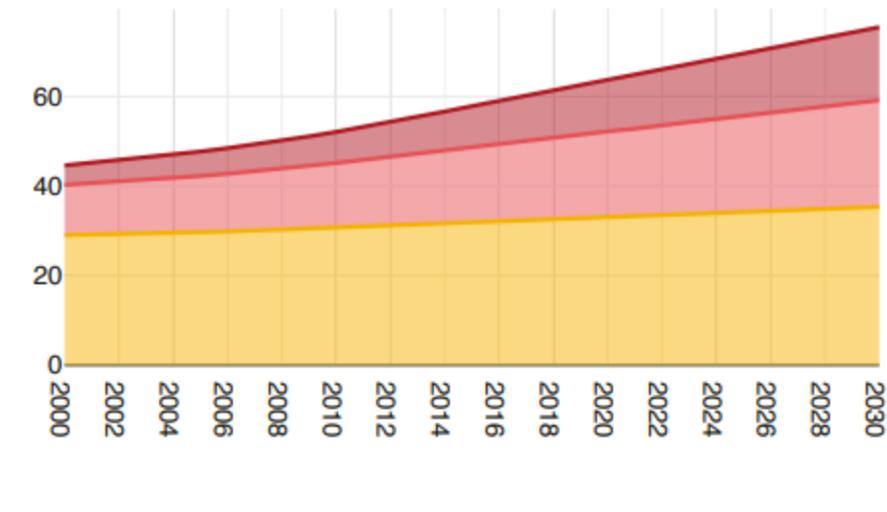
## Overweight and obesity prevalence over time

Projected proportion of adults living with high Body Mass Index ( $25\text{kg/m}^2$  and above)

% men with high BMI



% women with high BMI





Adults with high BMI in 2025



Adults living with obesity in 2025

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**119.16m**

Adults with high BMI in 2030



Mortes precoces diretamente associadas à obesidade/ano

**60,913**

Premature NCD deaths due to high BMI, 2021

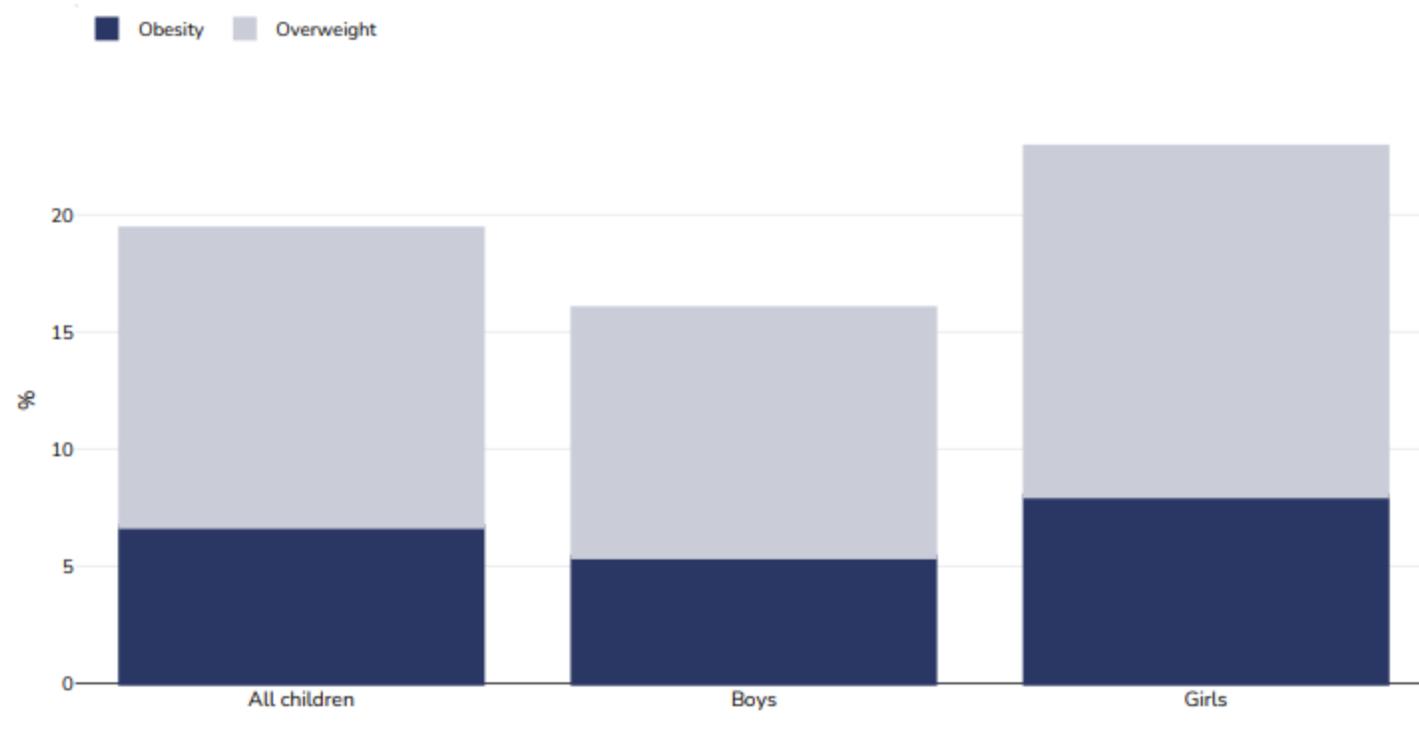
Pessoas com doenças não comunicáveis devido à obesidade

**1,703,415**

Adult person-years of NCD ill health due to high BMI, 2021



# Crianças





## National policies, action and risk factors

 National guidelines for the management of high BMI	Yes
 National guidelines for the management of physical inactivity	Yes
National guidelines for NCD management in primary care	Yes
 Survey of adult overweight and obesity in the last five years	Yes
 Survey of adult unhealthy diets in the last five years	Yes
Survey of adult physical inactivity in the last five years	Yes
 Taxes on sugar-sweetened beverages	Yes
 Sugar-sweetened beverage consumption per person per week	1000-2500ml
 Proportion of adults with insufficient physical activity	40-50%

n/a = status not certain or unavailable

**Sources:** Institute for Health Metrics 2024, WHO Global Health Observatory 2024, NCD Risk Factor Collaboration 2024, UN Population Division 2024, Lara-Castor et al 2023 (DOI: 10.1038/s41467-023-41269-8), World Obesity Federation 2024.



# Brazil

IDH 0,786  
Gini 0,63



Adults with high BMI in 2025



Adults living with obesity in 2025



# Mexico

IDH 0,788  
Gini 0,53



Adults with high BMI in 2025



Adults living with obesity in 2025

## National policies, action and risk factors

	National guidelines for the management of high BMI	Yes
	National guidelines for the management of physical inactivity	Yes
	National guidelines for NCD management in primary care	Yes
	Survey of adult overweight and obesity in the last five years	Yes
	Survey of adult unhealthy diets in the last five years	Yes
	Survey of adult physical inactivity in the last five years	Yes
	Taxes on sugar-sweetened beverages	Yes
	Sugar-sweetened beverage consumption per person per week	1000-2500ml
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	Survey of adult unhealthy diets in the last five years	Yes
	Survey of adult physical inactivity in the last five years	Yes
	Taxes on sugar-sweetened beverages	Yes
	Sugar-sweetened beverage consumption per person per week	1000-2500ml
	Proportion of adults with insufficient physical activity	20-30%



# Brazil

IDH 0,786  
Gini 0,63



Adults with high BMI in 2025



Adults living with obesity in 2025



# Germany

IDH 0,942  
Gini 0,32



Adults with high BMI in 2025



Adults living with obesity in 2025

## National policies, action and risk factors

National guidelines for the management of high BMI	Yes
National guidelines for the management of physical inactivity	Yes
National guidelines for NCD management in primary care	Yes
Survey of adult overweight and obesity in the last five years	Yes
Survey of adult unhealthy diets in the last five years	Yes
Survey of adult physical inactivity in the last five years	Yes
Taxes on sugar-sweetened beverages	Yes
Sugar-sweetened beverage consumption per person per week	1000-2500ml
Proportion of adults with insufficient physical activity	40-50%

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National guidelines for NCD management in primary care	Yes
Survey of adult overweight and obesity in the last five years	No
Survey of adult unhealthy diets in the last five years	Yes
Survey of adult physical inactivity in the last five years	Yes
Taxes on sugar-sweetened beverages	No
Sugar-sweetened beverage consumption per person per week	500-1000ml
Proportion of adults with insufficient physical activity	10-20%

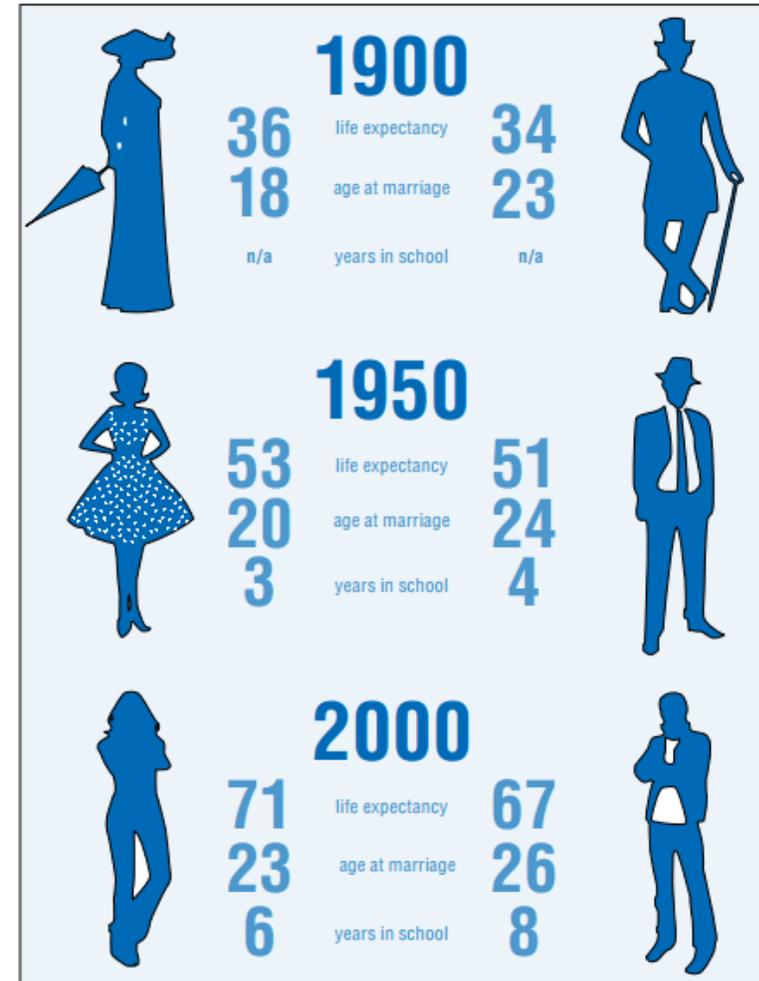
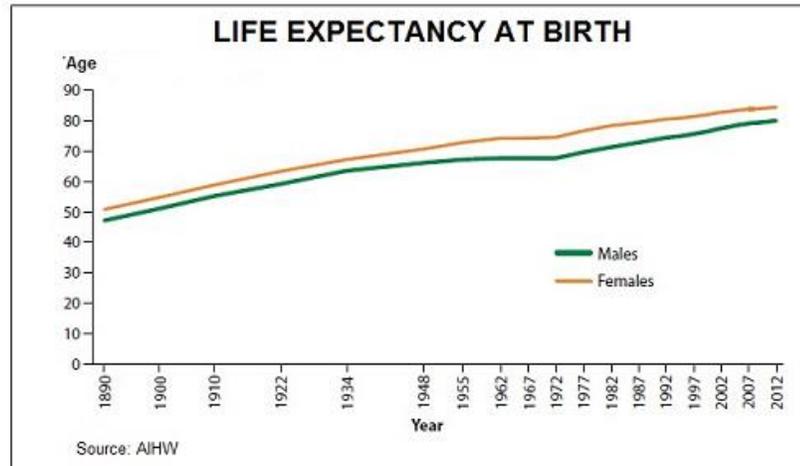
# Determinantes históricos da obesidade

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PARTE 2

Figure 12.1. Average life expectancy at birth, marriage age and average years of education for women and men in the 20th century

Values in years



Note: For an assessment of data quality, see Table 12.2.  
Source: Clio-Infra, [www.clio-infra.eu](http://www.clio-infra.eu).

StatLink <http://dx.doi.org/10.1787/888933096255>





81 anos

# JAPAN



84 anos

# Razões para o aumento da expectativa de vida dos seres humanos

- Saneamento
- Água potável
- Vacinas
- Antibióticos
- Disponibilidade de alimentos

# Razões para o aumento da expectativa de vida dos seres humanos

- Saneamento
- Água potável
- Vacinas
- Antibióticos
- Disponibilidade de alimentos











↑ Zona Leste  
Centro

19°C

60



2-3

1.65

2-4

2.74

2-2

1.19

basics

47

buy 4

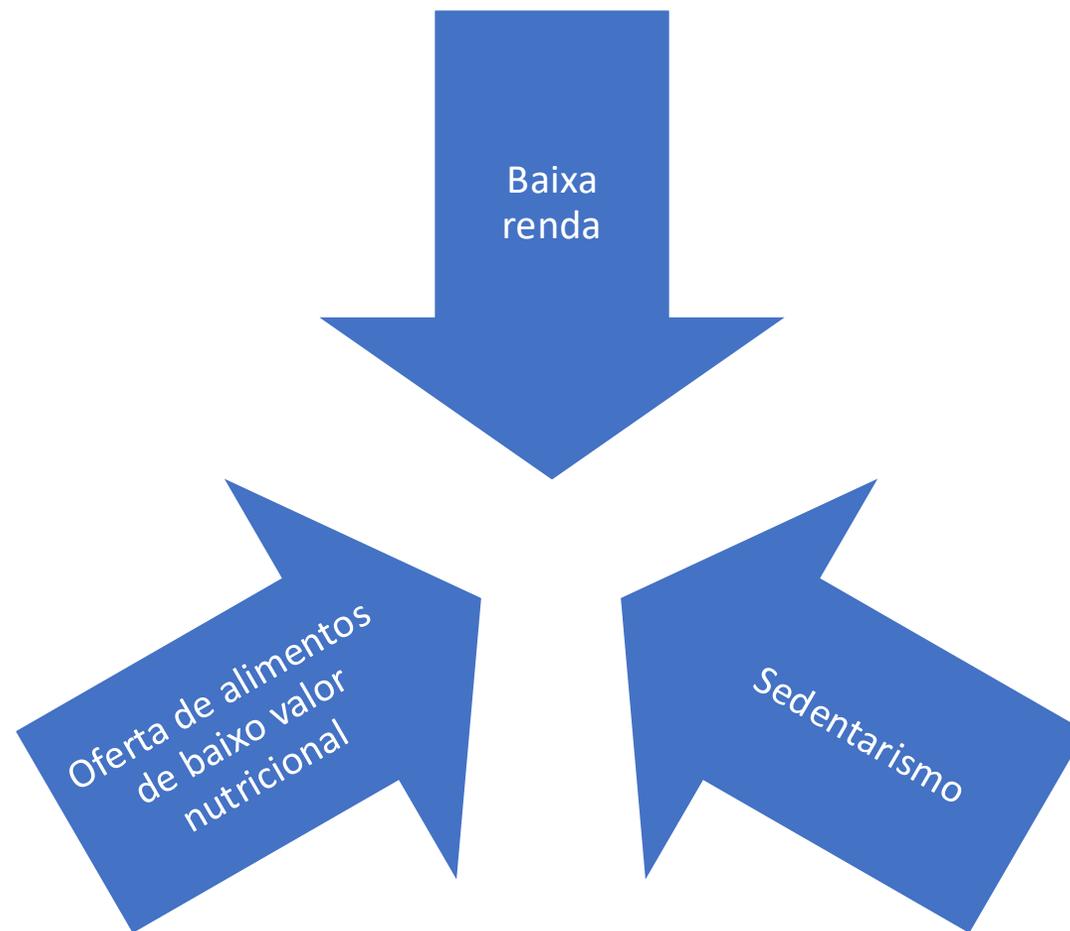
buy 4

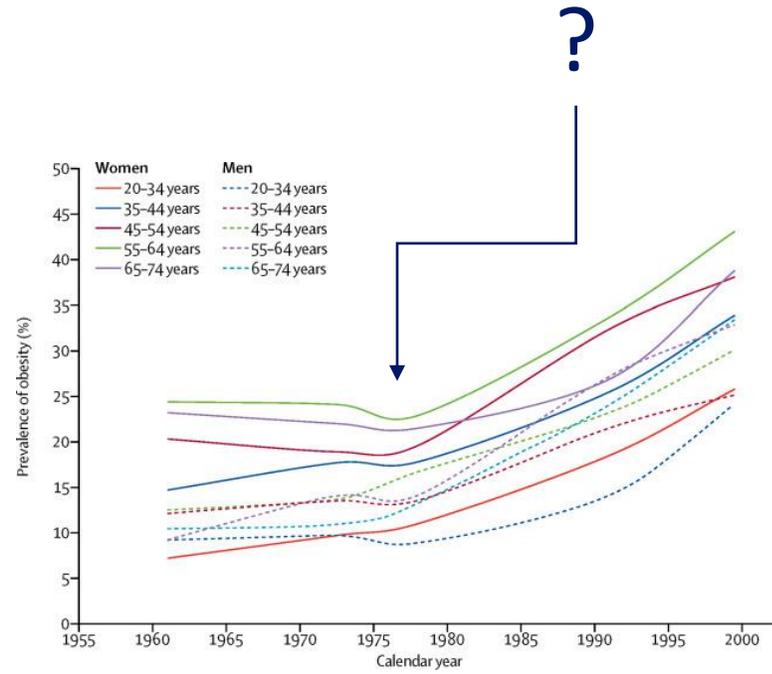
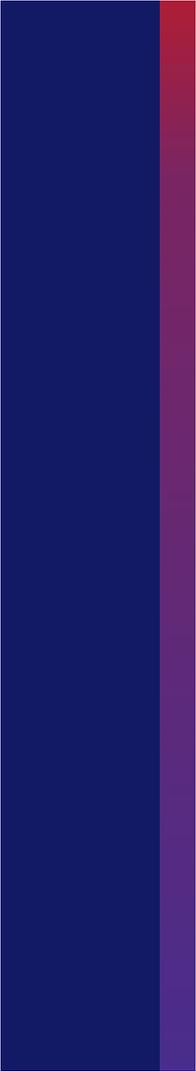
buy 4

Save time

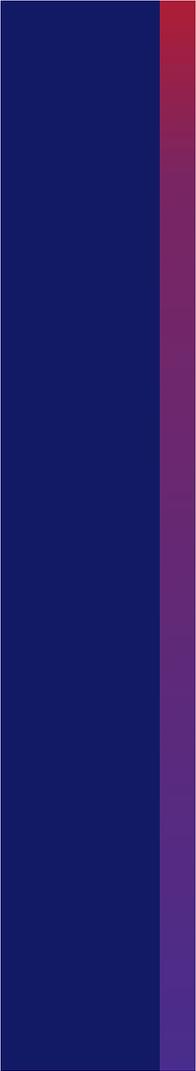
PRIMULA  
CHEESE  
DIPPERS

# Cenário





*Rodgers, The Lancet – Public Health 2018*



# Agricultural Subsidies and the American Obesity Epidemic

Caroline Franck, MSc, Sonia M. Grandi, MSc, Mark J. Eisenberg, MD, MPH  
(Am J Prev Med 2013;45(3):327–333)

## Alimentos industrializados

- 
- 38% gordura
  - 20% açúcar
  - 1000 kCal/dia



# Conclusões parciais

- Obesidade se tornou um problema de saúde pública em quase todos os países do mundo
- O número de pessoas com sobrepeso e o número de crianças e adolescentes com sobrepeso e obesidade nos permitem prever que a prevalência da obesidade continuará a crescer por mais de duas décadas
- Mudanças no modelo de produção de alimentos tem impacto primordial no aumento da prevalência da obesidade

# O impacto da obesidade na vida e na saúde das pessoas

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PARTE 3

- O conceito de doença dado pela OMS (Organização Mundial de Saúde) se refere a um conjunto de sinais e sintomas que possam afetar o bem-estar do paciente, seja este mental, físico ou social, não sendo especificamente apenas a presença de enfermidades.



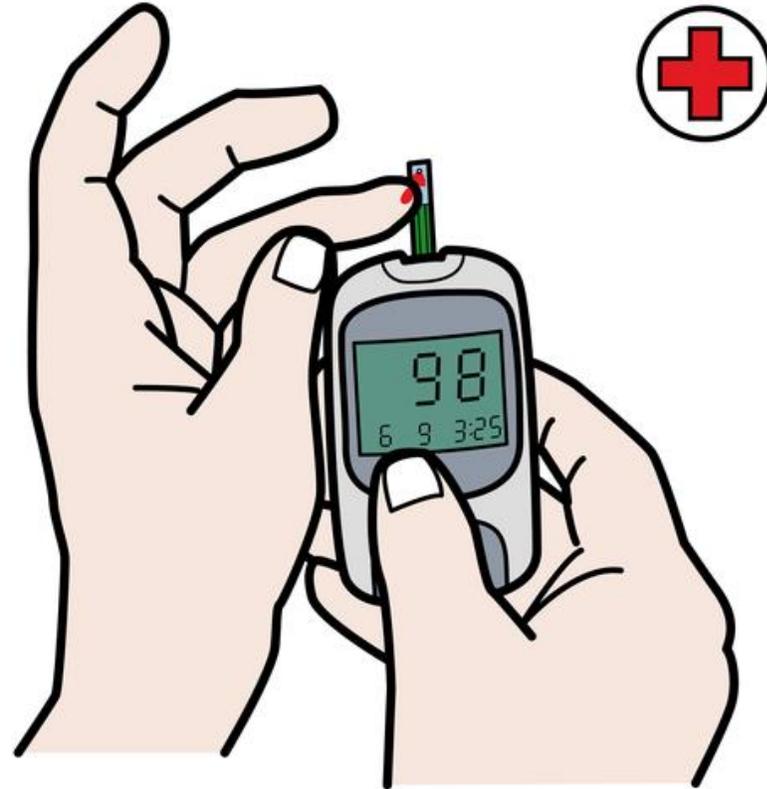
CID

• E66





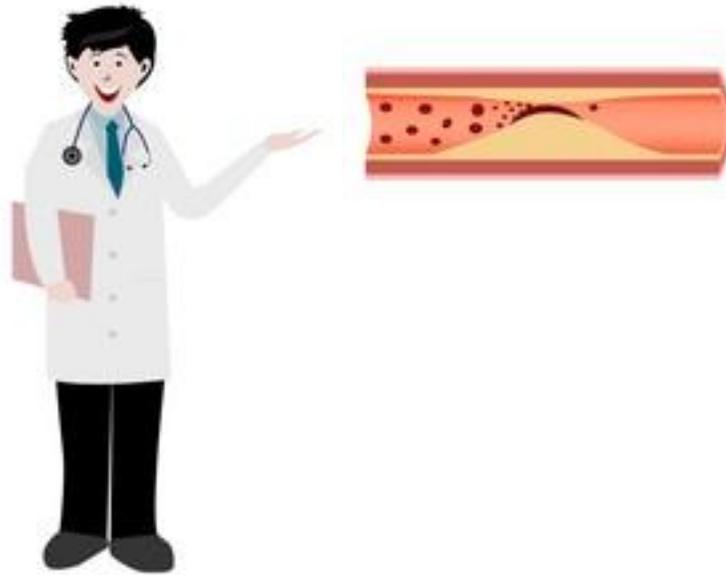
# Diabetes

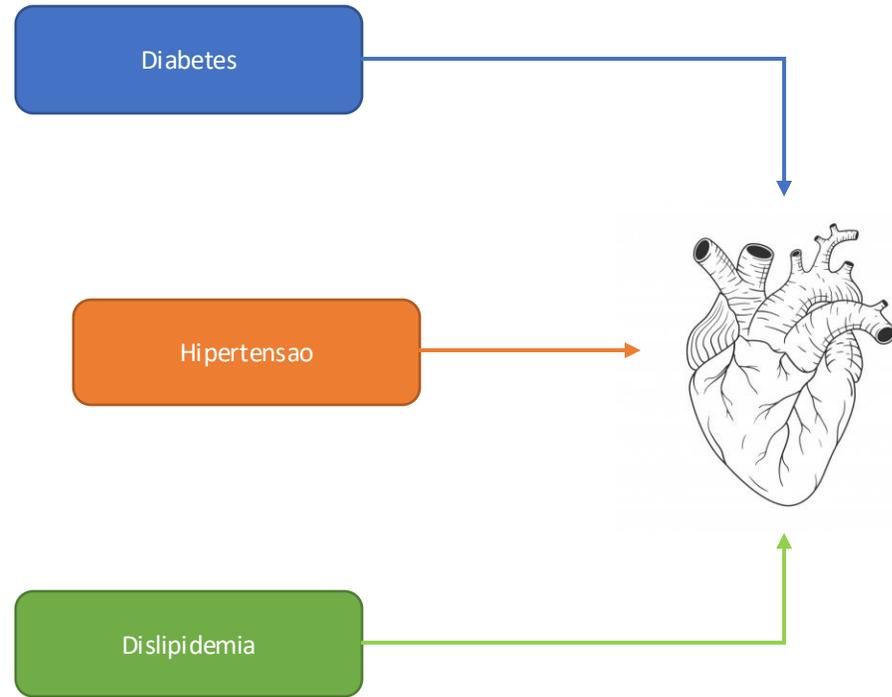


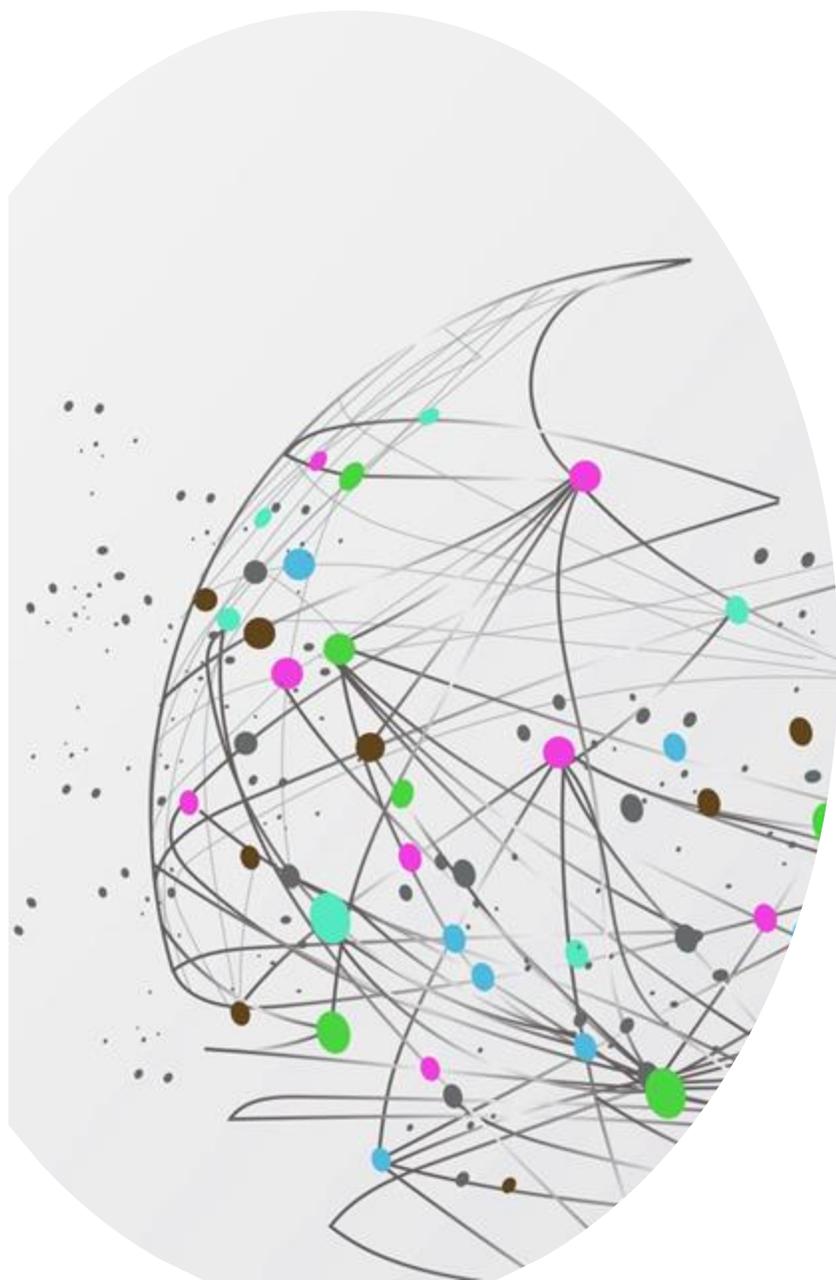
# Hipertensão



# Dislipidemia







Risco Relativo

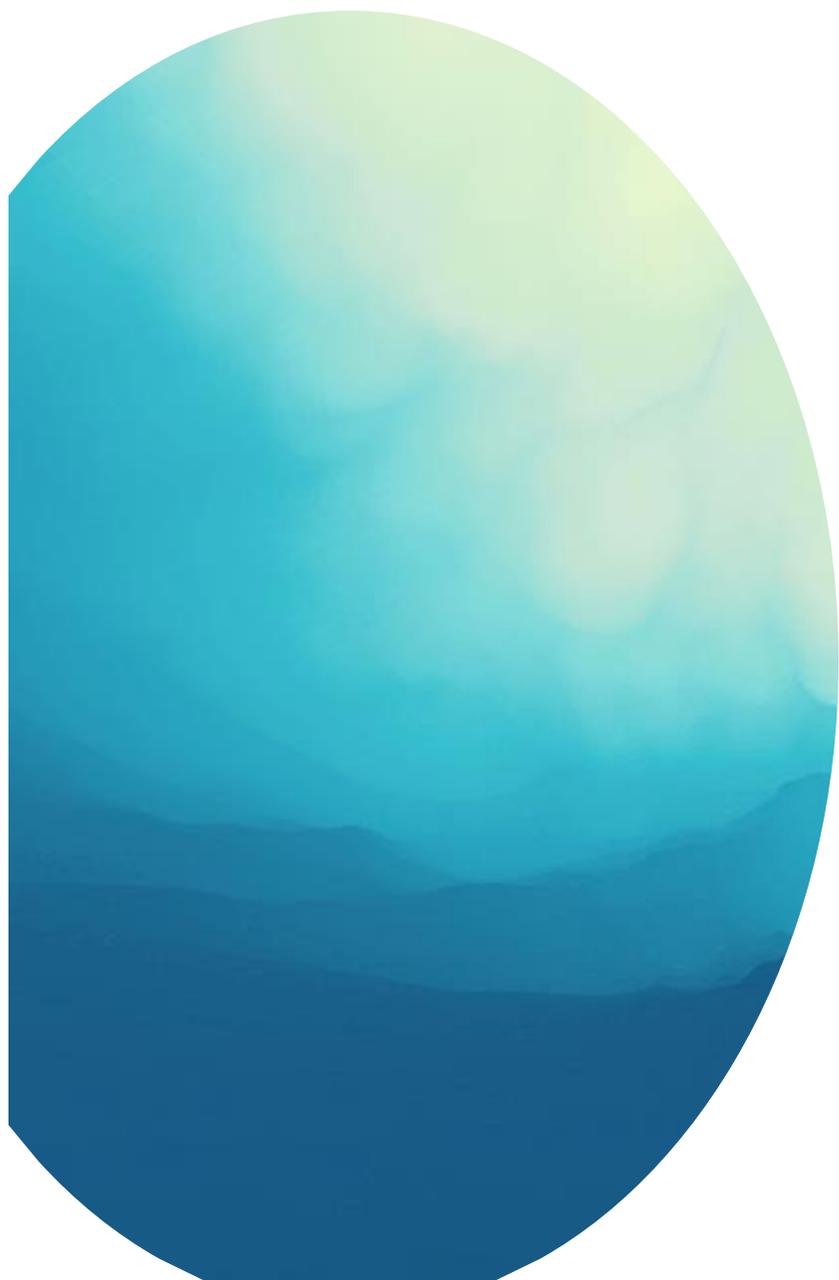


# Prevalência de diabetes

● 8%



24% dos indivíduos  
com obesidade têm  
diabetes



Obesidade representa  
um  $RR=3$  para  
obesidade

## Obesidade e RR

Hipertensão  
arterial = 2,5

Dislipidemia  
= 2,0



30% da população tem hipertensão  
75% das pessoas com obesidade tem  
hipertensão

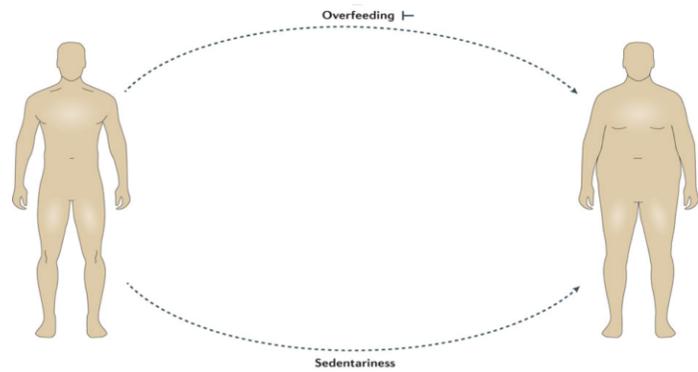
# Conclusões parciais

- Obesidade é uma doença
- Obesidade se associa a uma série de problemas comportamentais e socioeconômicos
- Obesidade aumenta bastante o risco para o desenvolvimento de várias doenças graves

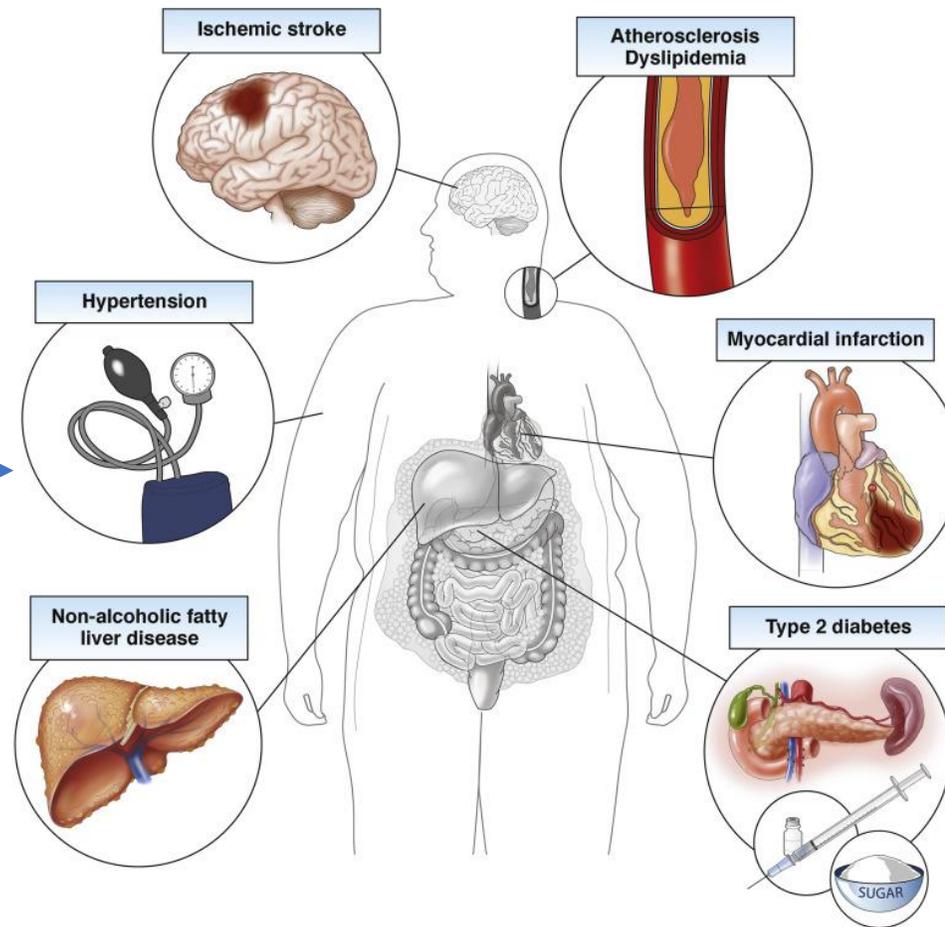
# A rota para o desenvolvimento de comorbidades

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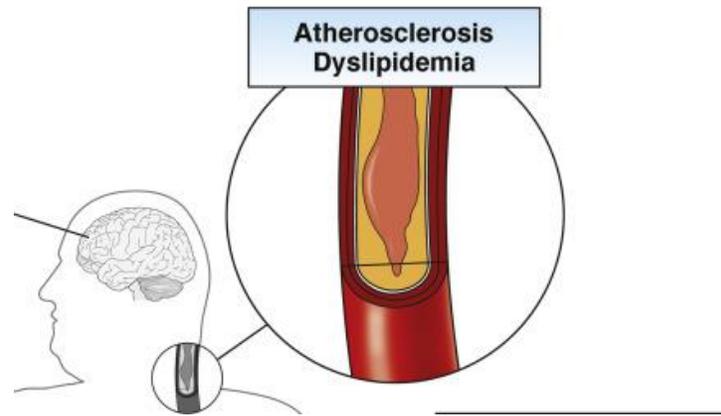
PARTE 4



Nature Reviews | Drug Discovery



# Atherosclerosis



# Por que demorou tanto tempo para que se definissem as causas para associação entre obesidade e doença coronariana?

882

THE NEW ENGLAND JOURNAL OF MEDICINE

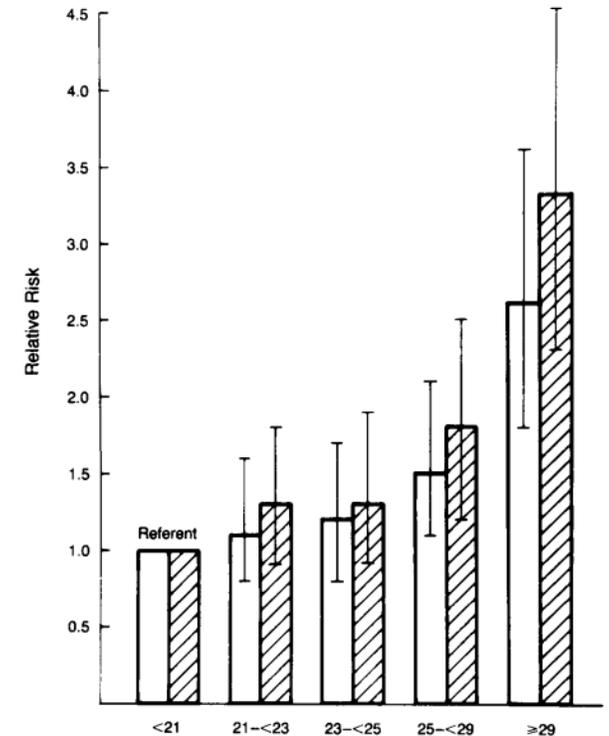
March 29, 1990

## A PROSPECTIVE STUDY OF OBESITY AND RISK OF CORONARY HEART DISEASE IN WOMEN

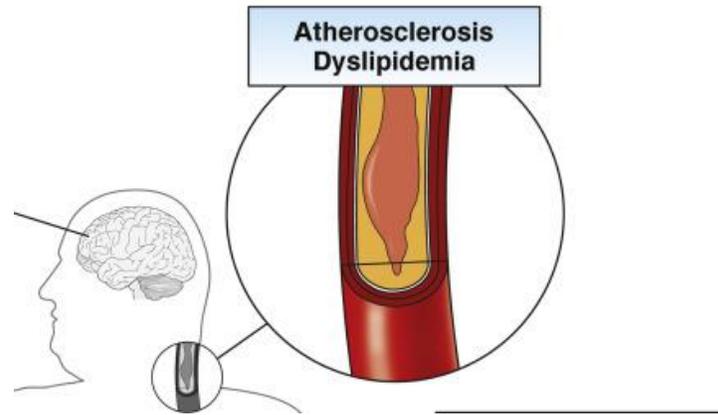
JOANN E. MANSON, M.D., GRAHAM A. COLDITZ, M.B., B.S., MEIR J. STAMPFER, M.D.,  
WALTER C. WILLETT, M.D., BERNARD ROSNER, PH.D., RICHARD R. MONSON, M.D., FRANK E. SPEIZER, M.D.,  
AND CHARLES H. HENNEKENS, M.D.

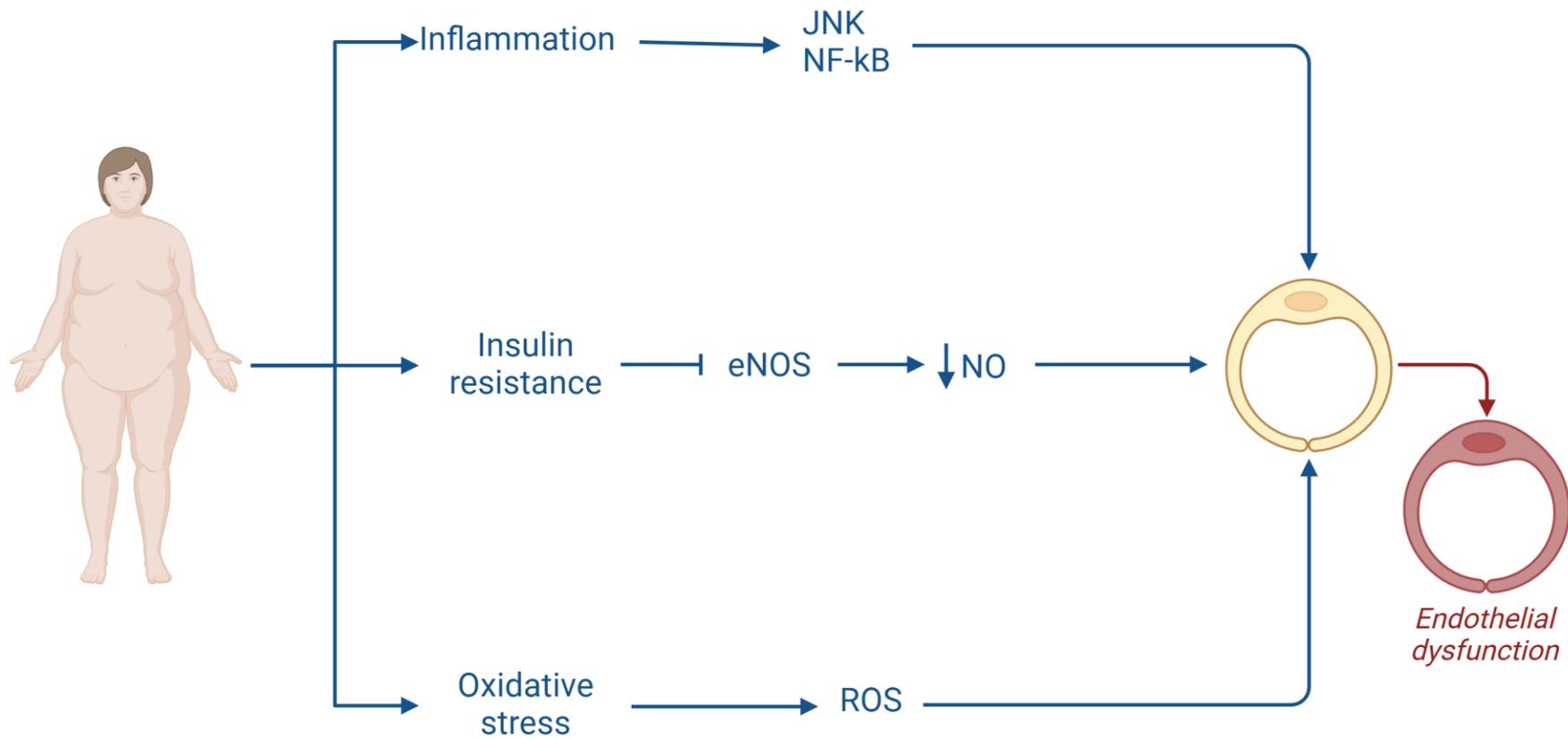
>115 mil pessoas

There are limited data about the influence of obesity on cardiovascular risk in women. Although coronary heart disease remains the leading cause of death in both sexes in the United States, most prospective studies of obesity and coronary disease have included only men. In addition, most previous studies have failed to control for cigarette smoking or weight loss due to preexisting disease or have equated the true effect of obesity with its residual influence after control for the biologic effects of obesity, such as hypertension and hyperglycemia.<sup>11-23</sup>

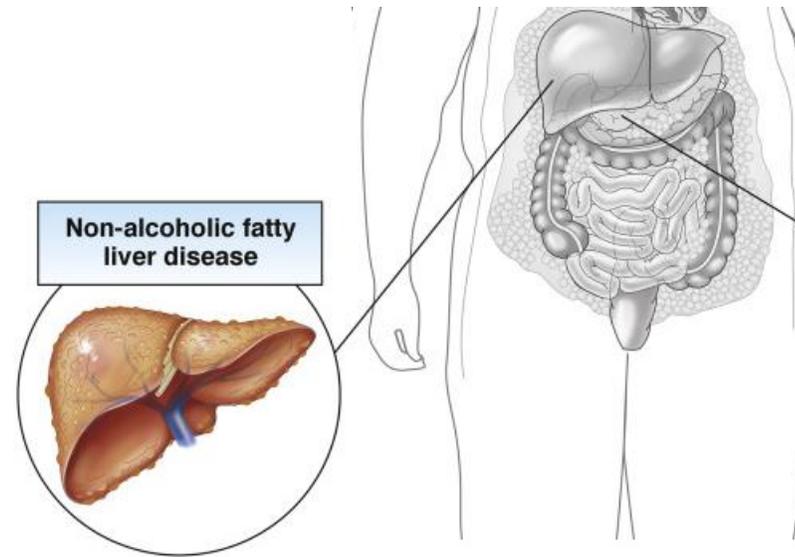


# Como a obesidade promove aterosclerose?



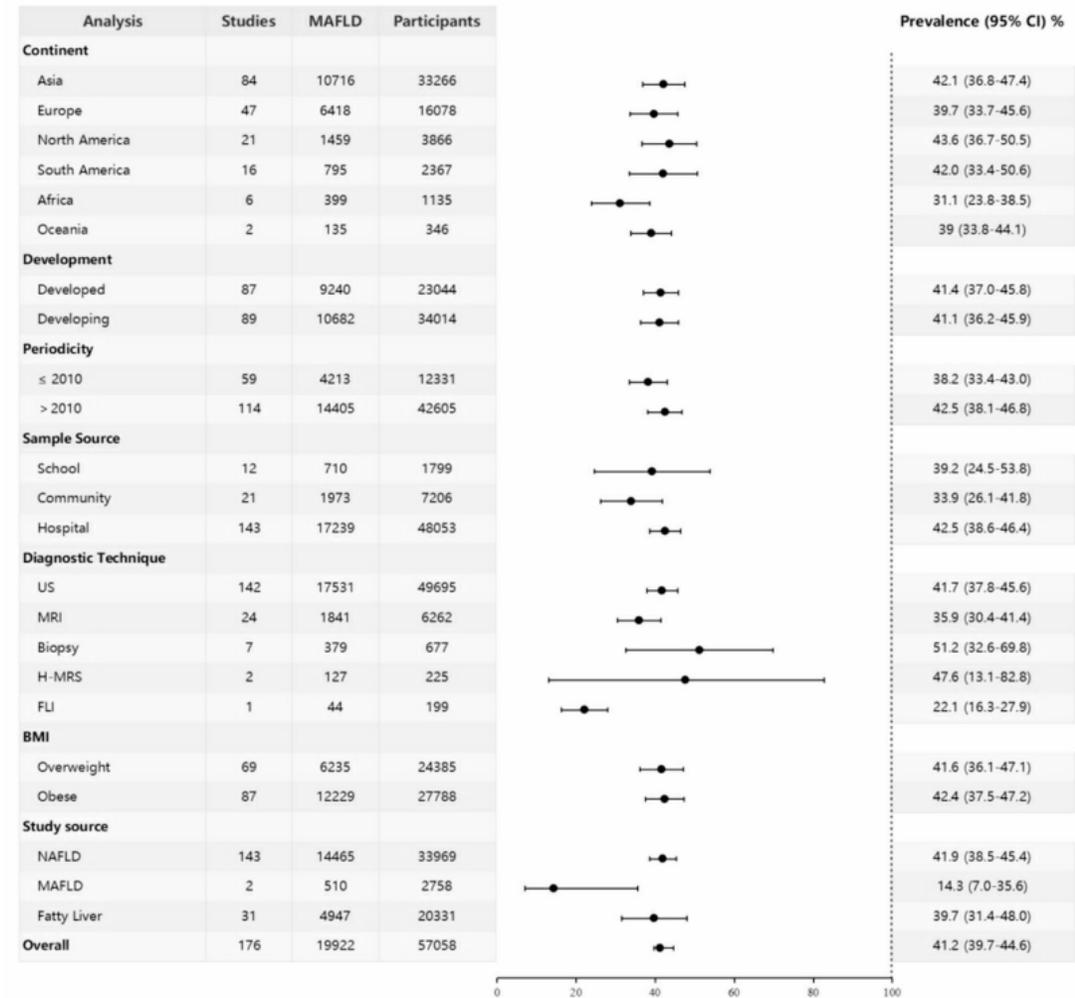


# Como a obesidade aumenta a chance de desenvolvimento de doença hepática gordurosa?



# Global prevalence of metabolic dysfunction-associated fatty liver disease in children and adolescents with overweight and obesity: a systematic review and meta-analysis

Shuangzhen Jia<sup>1</sup>, Xiaolin Ye<sup>1</sup>, Tianwei Wu<sup>2</sup>, Zhaoxia Wang<sup>3</sup> and Jie Wu<sup>1\*</sup>

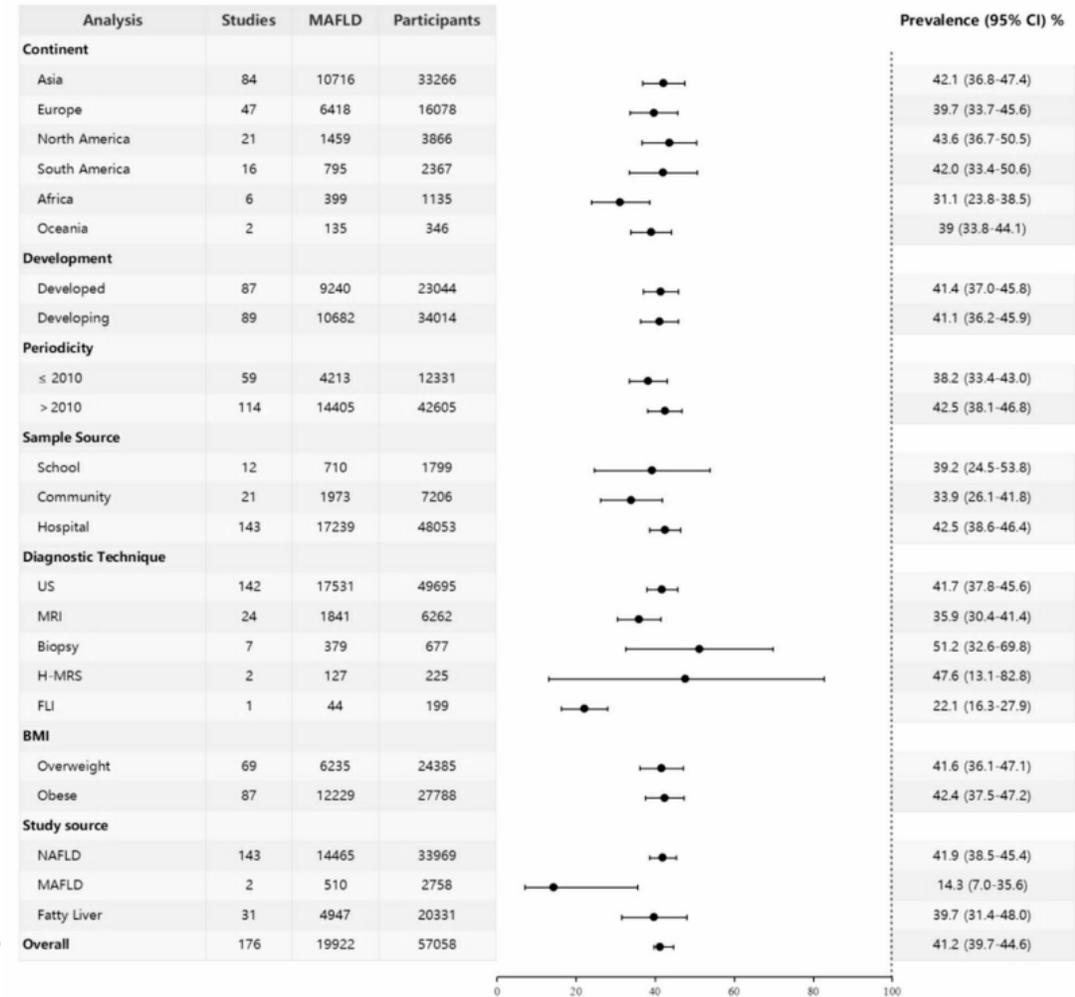


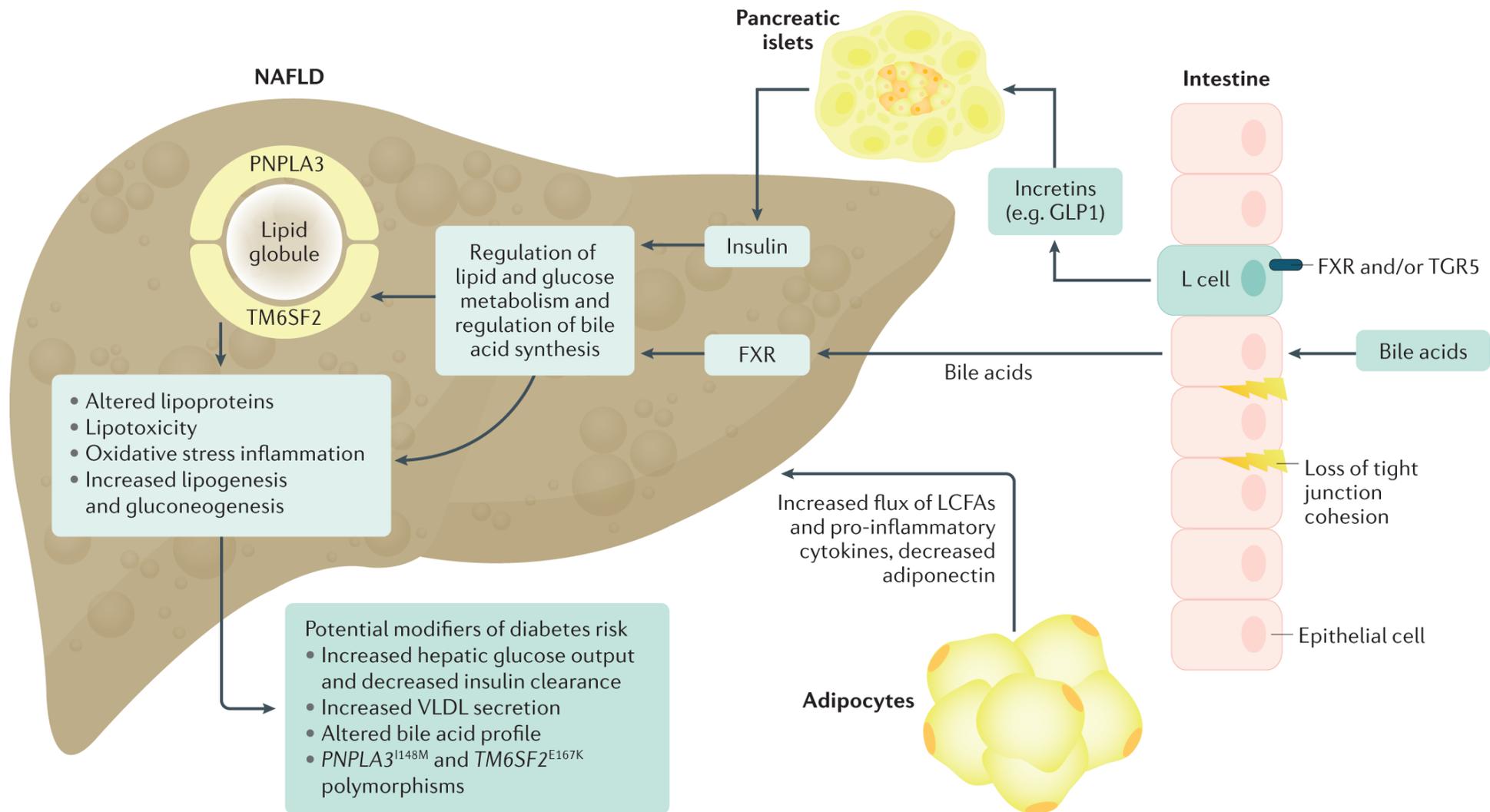
# Global prevalence of metabolic dysfunction-associated fatty liver disease in children and adolescents with overweight and obesity: a systematic review and meta-analysis

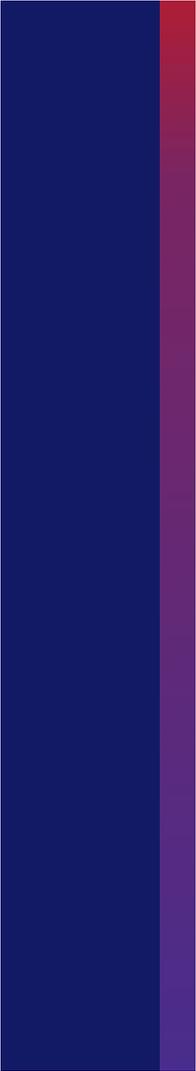
Shuangzhen Jia<sup>1</sup>, Xiaolin Ye<sup>1</sup>, Tianwei Wu<sup>2</sup>, Zhaoxia Wang<sup>3</sup> and Jie Wu<sup>1\*</sup>

57 Thousand

41,2%







# Agricultural Subsidies and the American Obesity Epidemic

Caroline Franck, MSc, Sonia M. Grandi, MSc, Mark J. Eisenberg, MD, MPH  
(Am J Prev Med 2013;45(3):327–333)

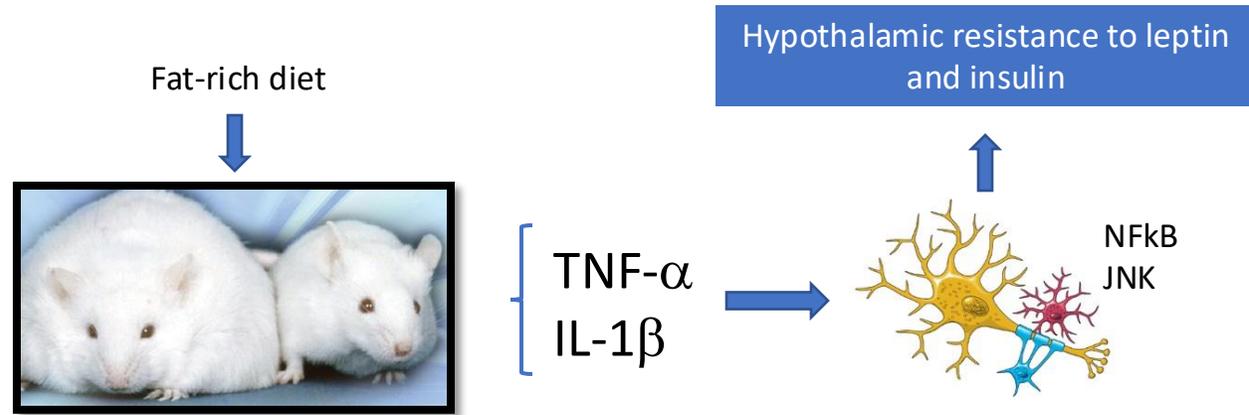
## Alimentos industrializados

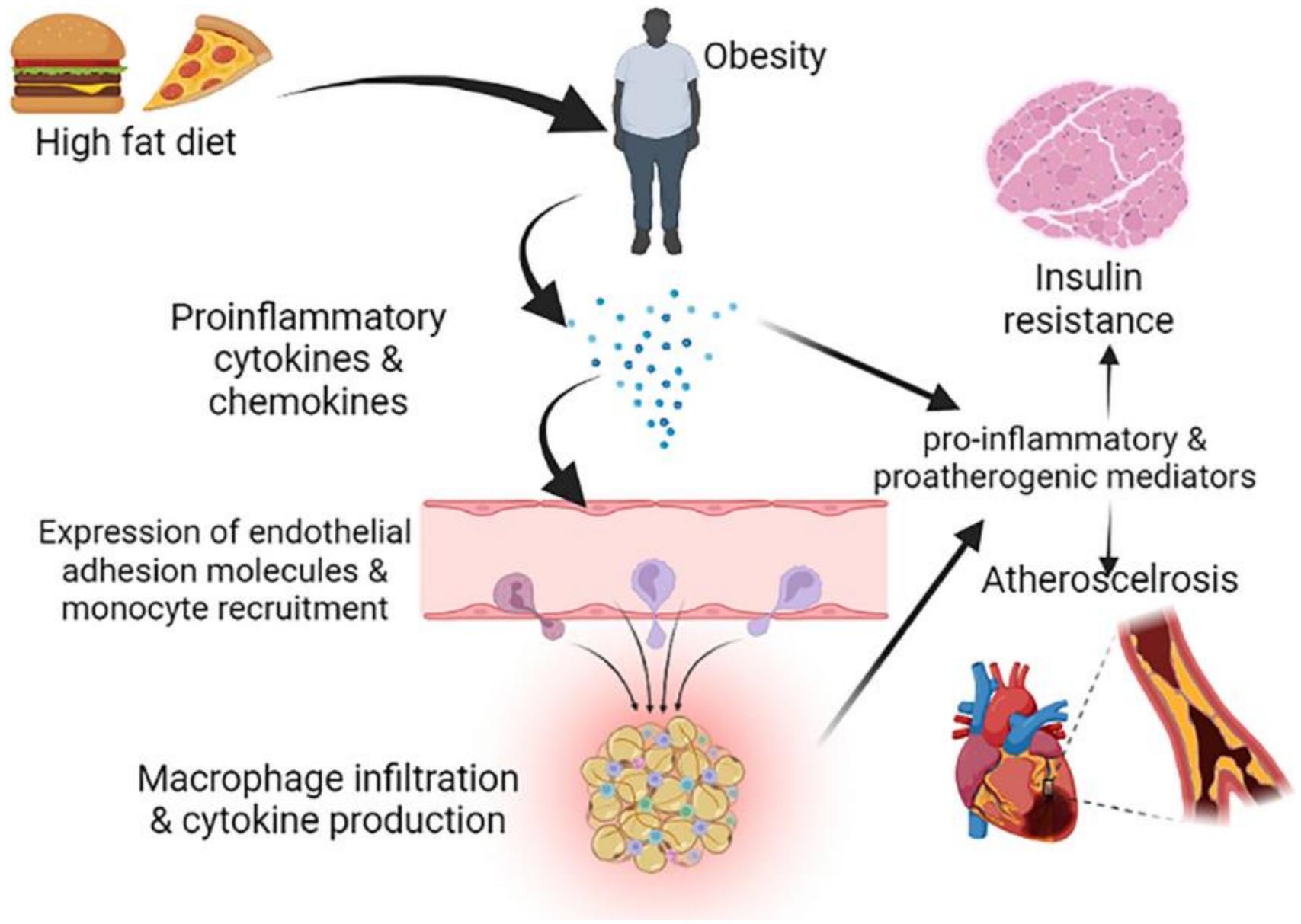
- 
- 38% gordura
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  - 1000 kCal/dia

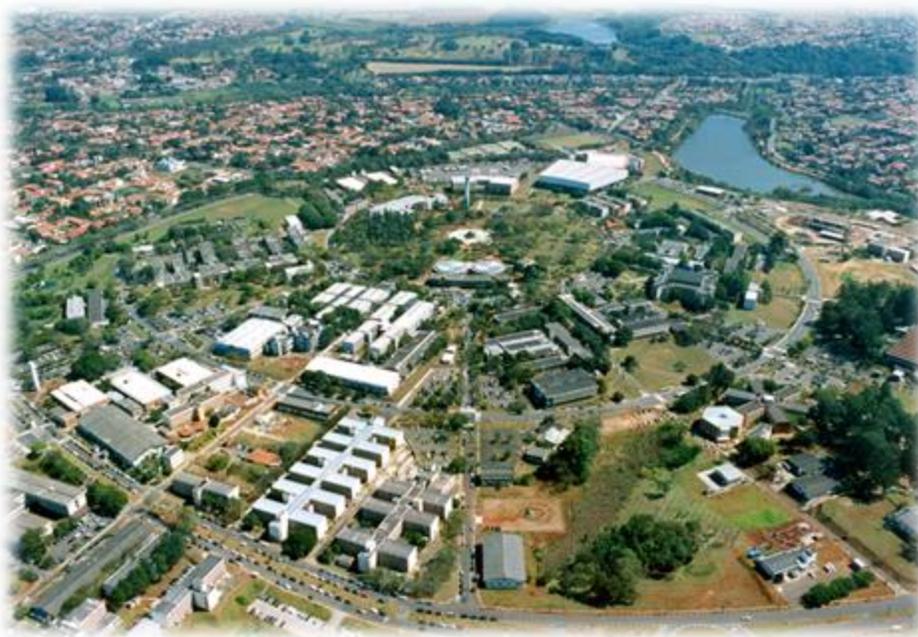
## Consumption of a Fat-Rich Diet Activates a Proinflammatory Response and Induces Insulin Resistance in the Hypothalamus

Cláudio T. De Souza,\* Eliana P. Araujo,\* Silvana Bordin, Rika Ashimine, Ricardo L. Zollner, Antonio C. Boschero, Mário J. A. Saad, and Lício A. Velloso

Departments of Internal Medicine (C.T.D.S., E.P.A., R.A., R.L.Z., M.J.A.S., L.A.V.) and Physiology and Biophysics (A.C.B.), State University of Campinas, 13084-970 Campinas-SP; and Department of Physiology and Biophysics (S.B.), University of São Paulo, 05508-900 São Paulo-SP, Brazil







Obrigado