OBESIDAD

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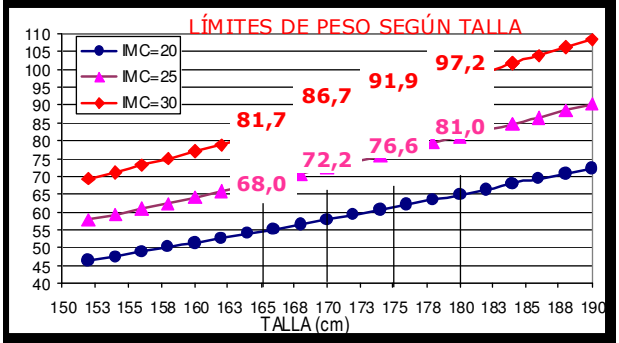
DEFINICIÓN: **BMI ó IMC (Kg/m²)**

Normal: 18,5-25 Kg/m^2 ✔

Sobrepeso: 25-30 Kg/m^2

Obesidad: >30 Kg/m^2
- Grado I: 30-35
- Grado II: 35-40
- Mórbida (III): >40

La obesidad es una variable continua



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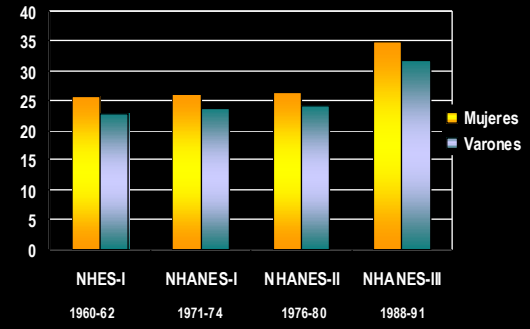
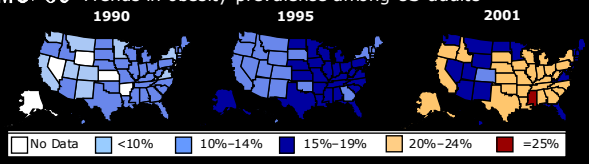
Prevalencia Obesidad (>27,3 kg/m²) en EE.UU.

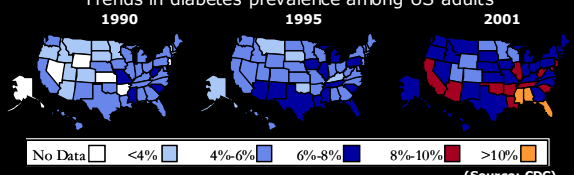
Entre 1960 y 1991



IMC>30 Trends in obesity prevalence among US adults



Trends in diabetes prevalence among US adults



(Source: CDC)

Prevalence of Overweight and Obesity in the United States, 1999-2004. Ogden et al, JAMA 2006;295:1549-55

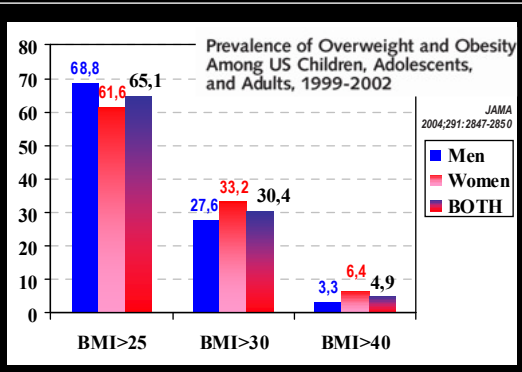
IMC>30

National Health & Nutrition Exam. Survey

Table 5. Prevalence of Overweight, Obesity, and Extreme Obesity in Adults by Sex, Age, and Racial/Ethnic Group for 1999-2000, 2001-2002, and 2003-2004*

	Prevalence of Overweight, Obesity, or Extreme Obesity by Age, % (SE)							
	Men				Women			
	All (≥20 y)	20-39 y	40-59 y	≥60 y	All (≥20 y)	20-39 y	40-59 y	≥60 y
All†								
Overweight or obesity‡								
1999-2000	67.2 (1.7)	60.5 (2.2)	70.0 (3.1)	74.1 (1.5)	61.9 (2.3)	54.4 (2.5)	66.1 (3.4)	68.1 (2.4)
2001-2002	70.0 (1.0)	59.7 (1.8)	78.2 (1.4)	74.4 (1.7)	61.4 (1.1)	54.7 (2.1)	63.7 (1.9)	69.2 (2.5)
2003-2004	70.8 (1.4)	62.2 (2.1)	78.2 (2.8)	73.7 (1.4)	61.8 (1.9)	51.7 (2.6)	68.1 (3.1)	68.9 (2.3)
Obesity§								
1999-2000	27.5 (1.5)	23.7 (1.6)	28.8 (2.9)	31.8 (2.2)	33.4 (1.7)	28.3 (2.0)	37.8 (3.3)	35.0 (2.2)
2001-2002	27.8 (1.0)	22.3 (1.5)	32.2 (1.7)	30.2 (1.9)	33.3 (1.5)	29.8 (2.1)	35.7 (2.1)	35.2 (2.0)
2003-2004	31.1 (1.3)	26.0 (2.2)	34.8 (2.5)	30.4 (1.9)	33.2 (1.7)	28.9 (2.3)	38.8 (2.7)	31.5 (1.7)
Extreme obesity‖								
1999-2000	3.1 (0.7)	3.0 (0.8)	4.0 (1.1)	1.8 (0.6)¶	6.3 (0.7)	6.0 (0.8)	7.5 (1.6)	4.7 (0.8)
2001-2002	3.6 (0.6)	4.5 (1.0)	3.8 (1.0)	1.8 (0.6)¶	6.5 (0.6)	5.0 (0.7)	7.9 (1.3)	6.8 (1.0)
2003-2004	2.8 (0.4)	3.1 (0.7)	2.7 (0.7)	2.5 (0.6)	6.9 (0.9)	8.0 (1.5)	7.9 (1.4)	3.3 (0.7)

http://www.who.int/bmi/



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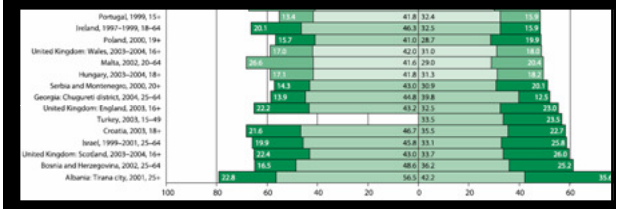
- ❑ PREVENCIÓN Y CONTROL

The challenge of obesity in the European Union

- Estudios transversales
- Muestras representativas
- Realizados después del 99

(Branca, Nikogosian & Lobstein WHO-Europe, 2007)

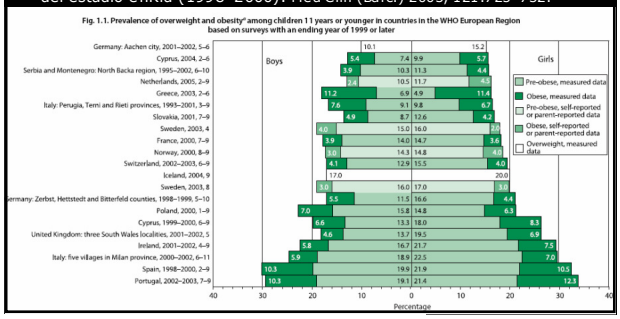


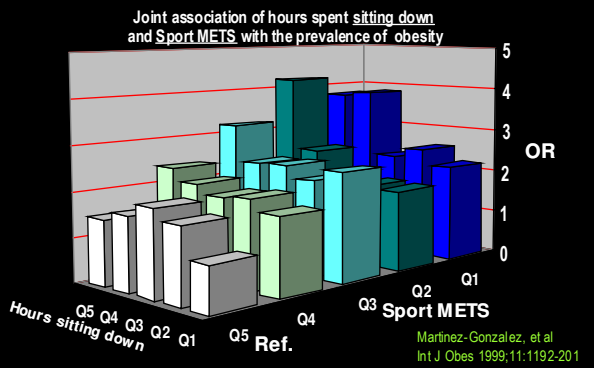
The prevalence of obesity **has risen threefold** or more since the 1980s, even in countries with traditionally low rates.

Among both women and men, the prevalence of overweight has risen rapidly in **Ireland** and the **United Kingdom** (England and Scotland), by more than **0.8** percentage point **a year**, based on measured data.

In various regions of Spain, the prevalence of overweight in adolescents aged 13–14 more than doubled from 1985 to 2002

Serra-Majem, et al. Obesidad infantil y juvenil en España: resultados del estudio enKid (1998–2000). Med Clin (Barc.) 2003, 121:725–732.





Martinez-Gonzalez, et al Int J Obes 1999;11:1192-201

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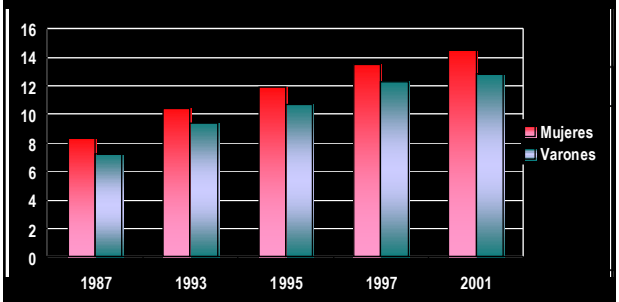
Encuestas Nacionales de Salud



ORIGINALES

Tendencias de la obesidad, diabetes mellitus, hipertensión e hipercolesterolemia en España (1997-2003)

F. Javier Basterra-Gortari[a,b], Maira Bes-Rastrollo[a], María Segul-Gómez[a], Lluis Forga[b,c], J. Alfredo Martínez[a] y Miguel Ángel Martínez-González[a]

[a]Departamento de Medicina Preventiva y Salud Pública.

Prevalencia (%) de obesidad (índice de masa corporal > 30 kg/m²) por estratos de edad en las Encuestas Nacionales de Salud (ENS)[a]

AUTO-DECLARADOS

Edad (años)	ENS 1997	EMC 2001	ENS 2003	p[a]
16-29	3,1	3,9	4,2	0,20
30-39	7,6	9,0	9,3	0,08
40-49	14,7	12,9	14,5	0,71
50-59	19,0	19,9	18,8	0,76
60-69	22,8	22,7	23,4	0,66
≥ 70	18,4	21,6	19,4	0,81
Total	11,9	12,8	13,3	0,006[b]

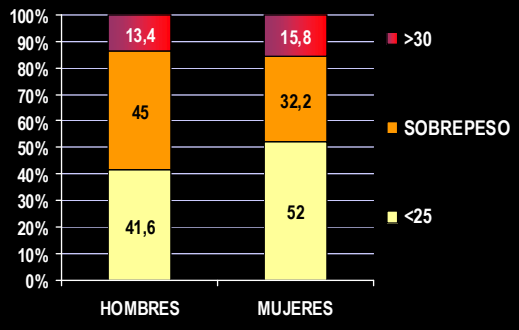
Med Clin (Barc) 2007;129:405-8

Estudio SEEDO

- 1990-2000
- Muestras aleatorias
- 25-60 años
- 8 CCAA: Andalucía, Baleares, País Vasco, Canarias, Cataluña, Galicia, Madrid y Valencia
- Medición directa de peso y talla

Med Clin (Barc) 2003;120:608-12

Estudio SEEDO

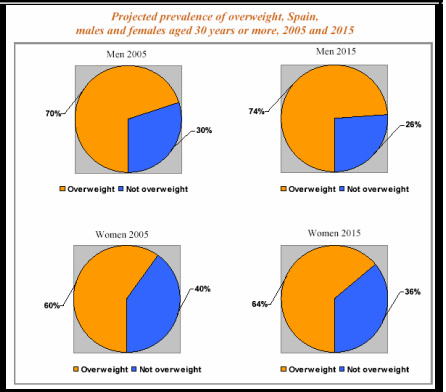


International Obesity Task Force (www.iotf.org)

WHO European Region			Boys	Girls	
Austria	2003	8-12yrs	22.5	16.7	90th centile
Belgium	1998-9	5-15yrs	27.7	26.8	85th centile
Bulgaria	1998	7-17yr	18.9	16.1	IOTF
Cyprus	1999-2000	6-17yrs	25.4	22.6	IOTF
Czech Republic	2001	5-17yr	14.7	13.4	IOTF
Denmark	1996/7	5-16yrs	14.1	15.3	IOTF
England	2004	5-17yrs	29	29.3	IOTF
Estonia (self report)	2001/2	13 & 15yrs	19.4	9	IOTF
Finland (self report)	1999	12, 14 & 16yrs	17.2	10.1	IOTF
France	2000	7-9yrs	17.9	18.2	IOTF
Germany	1995	5-17yrs	14.1	14.0	IOTF
Greece	2003	13-17yrs	29.6	16.1	IOTF
Hungary	1993-4	10 & 15	17.8	15.9	IOTF
Iceland	1998	9yrs	22.0	25.5	IOTF
Italy	1993-2001	5-17yrs	26.6	24.8	IOTF
Malta (self report)	2001	13 & 15yrs	30.9	20.1	IOTF
Netherlands	1997	5-17yrs	8.8	11.8	IOTF
Poland	2001	7-9yrs	13.6	14.7	IOTF
Portugal	2002/3	7-9yrs	29.5	34.3	IOTF
Russian Federation	1992	5-17yrs	24.2	19.7	IOTF
Slovakia	1995-99	11-17yrs	9.8	8.2	IOTF
Spain	2000/2	13-14yrs	35	32	IOTF
Sweden	2001	6-11yrs	17.6	27.4	IOTF
Switzerland	2002	6-12yrs	16.6	19.1	IOTF
Turkey	2001	12-17yrs	11.4	10.3	IOTF

iotf.org

who.int



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Encuesta Nacional de Salud

Aumento de las raciones

Aumento del sedentarismo

Informe SESPAS 2006, Gac Sanit. 2006;20(Supl 1):48-54

Causas de la obesidad

- Sedentarismo
  - TV
  - Desplazamientos en vehículos
- Más calorías
  - Picotear entre comidas (*snacks*)
  - Tamaño de raciones
  - Comer en restaurantes
- Patrón americanizado
  - Bebidas azucaradas
  - Fast food
  - Dietas pobres en fibra

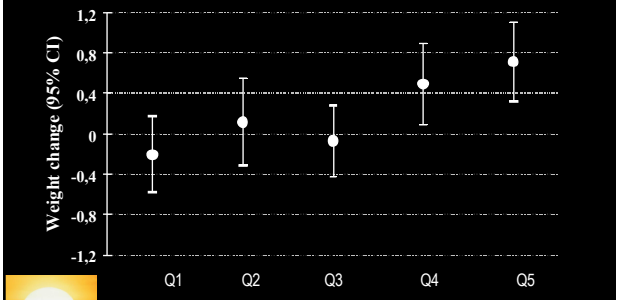
Ludwig et al, Lancet 2001; 357: 505–08

- 548 niños (11,7 años; DE: 0,8)
- Seguimiento prospectivo 19 meses
- Cada unidad de refresco= +0,24 kg/m2 (p=0,03)
- OR por unidad adicional = 1,6 (IC 95%: 1,14-2,24)

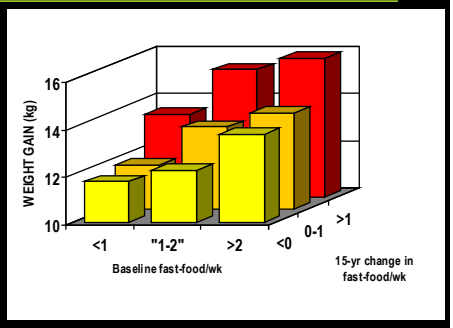
Schulze et al, JAMA 2004;292:927-34

- 91.249 mujeres (Nurses-II)- Edad: 36 (DE:5)
- Seguimiento 8 años (1991-9)
- Aumento de SSSD desde <=1/sem a >=1/día +4,7 kg (1991-5) y +4,2 Kg (1995-9)
- RR diabetes = 1,8 (IC 95%: 1,4-2,4)

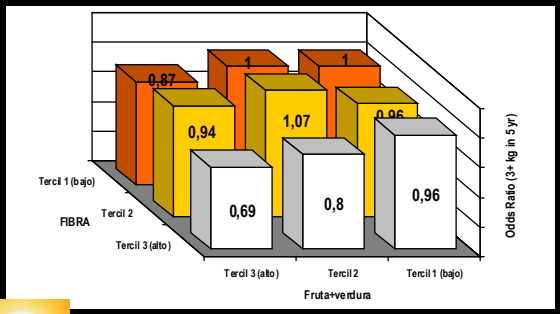
Bes-Rastrollo et al. Refrescos azucarados: quintiles.
Am J Clin Nutr 2006 Feb;83:362-70.



Pereira et al. Fast-food habits, weight gain, and insulin resitance (the CARDIA study): **15-year** prospective analysis. Lancet 1-1-05.
N = 3031, age =18-30 yr en 1985

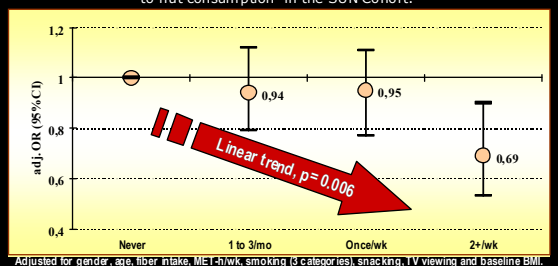


Bes-Rastrollo et al.
Association of fiber intake and fruit/vegetable consumption with weight gain in a Mediterranean population. Nutrition 2006;22:504-11



Bes-Rastrollo et al.
Nut Consumption and Weight Gain in a Mediterranean Cohort: The SUN Study. Obesity 2007;15:107-16.

OR (95% CI) of **weight gain (>=5 kg)** according to nut consumption in the SUN Cohort.



Adjusted for gender, age, liber intake, MET-h/wk, smoking (3 categories), snacking, TV viewing and baseline BMI.

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CONSECUENCIAS

- Mortalidad total:
  - Posibles sesgos
- Enfermedad cardiovascular
- Síndrome metabólico
- Hipertensión
- Diabetes
- Cáncer
  - Colon y recto
  - Mama postmenopaúsico
  - Endometrio
- Otros
  - Artrosis
  - Infertilidad

The New England Journal of Medicine

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VOLUME 341 OCTOBER 7, 1999 NUMBER 15

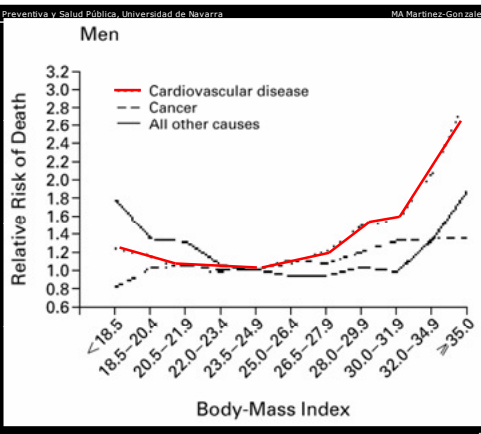
BODY-MASS INDEX AND MORTALITY IN A PROSPECTIVE COHORT OF U.S. ADULTS

EUGENIA E. CALLE, PH.D., MICHAEL J. THUN, M.D., JENNIFER M. PETRELLI, M.P.H., CARMEN RODRIGUEZ, M.D., M.P.H., AND CLARK W. HEATH, JR., M.D.

TABLE 1. COHORTS IN THE ANALYSIS OF OVERALL MORTALITY AND BODY-MASS INDEX.*

COHORT	MEN (N=457,785)	MEN WHO DIED (N=112,517)	WOMEN (N=588,369)	WOMEN WHO DIED (N=88,105)
	number			
Current or former smokers with a history of disease	123,586	48,893	95,109	22,351
Current or former smokers with no history of disease	216,788	42,925	170,979	19,313
Nonsmokers with a history of disease	33,035	9,986	104,424	23,647
Nonsmokers with no history of disease	84,376	11,713	217,857	22,794

*Nonsmokers had never smoked. Subjects with a history of disease reported one or more of the following at enrollment: cancer (except nonmelanoma skin cancer), heart disease, stroke, respiratory disease (chronic bronchitis, emphysema, or asthma), current illness (of any type), or a weight loss of



JAMA. 2007 (Nov 7);298:2028-2037

Cause-Specific Excess Deaths Associated With Underweight, Overweight, and Obesity

Katherine M. Flegal, PhD
Barry I. Graubard, PhD
David F. Williamson, PhD
Mitchell H. Gail, MD, PhD

Context The association of body mass index (BMI) with cause-specific mortality h not been reported for the US population.

Objective To estimate cause-specific excess deaths associated with underweight (BI <18.5), overweight (BMI 25-<30), and obesity (BMI ≥30).

EXCESS DEATHS ASSOCIATED WITH UNDERWEIGHT, OVERWEIGHT, AND OBESITY

Table 3. Estimated Number of Excess Deaths in the United States in 2004 Associated With Body Mass Index Levels, Based on the Combined NHANES I, II, and III Data Set

Cause of Death	Excess Deaths (95% Confidence Interval)			
	Underweight (BMI <18.5)	Normal Weight (BMI 18.5-<25)	Overweight (BMI 25-<30)	Obesity (BMI≥30)
Balanced follow-up				
CVD	8674 (343 to 17 004)	0 [Reference]	−17 074 (−50 407 to 16 259)	81 072 (51 433 to 110 710
Cancer	4144 (−1956 to 10 244)	0 [Reference]	−13 533 (−44 364 to 17 298)	14 930 (−13 721 to 43 582
Noncancer, non-CVD	33 380 (17 435 to 49 326)	0 [Reference]	−107 674 (−148 738 to −66 610)	−560 (−41 201 to 40 081
Total follow-up				
CVD	4097 (−1451 to 9645)	0 [Reference]	20 724 (−6092 to 47 540)	112 159 (87 842 to 136 476
Cancer	1548 (−2451 to 5547)	0 [Reference]	6780 (−18 418 to 31 977)	15 252 (−7946 to 38 451)
Noncancer, non-CVD	23 455 (11 848 to 35 061)	0 [Reference]	−69 299 (−100 702 to −37 897)	35 594 (−1287 to 72 476)

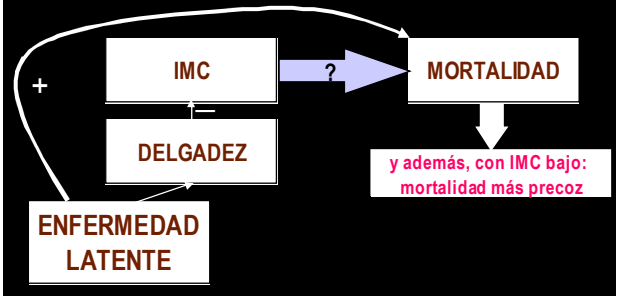
Abbreviations: BMI, body mass index, which is calculated as weight in kilograms divided by height in meters squared. CVD, cardiovascular disease; NHANES, National Health and Nutrition Examination Survey.

OBESIDAD Y MORTALIDAD

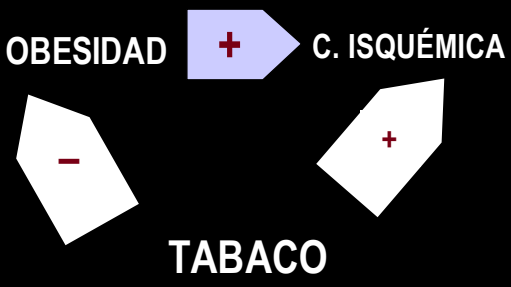
ASPECTOS METODOLÓGICOS

- Criterios de causalidad:
  - NO diseños experimentales
- Información sobre exposición
- Información sobre efecto
- Sesgo de confusión
  - Tabaco
  - HTA, diabetes, lípidos
- Sesgo por inclusión (enf. subclínica)

SESGO POR INCLUSIÓN (causalidad inversa)



SESGO de CONFUSIÓN



¿SESGO de CONFUSIÓN?

OBESIDAD → C. ISQUÉMICA

?

\+ ΔLípidos
\+ Diabetes
\+ HTA

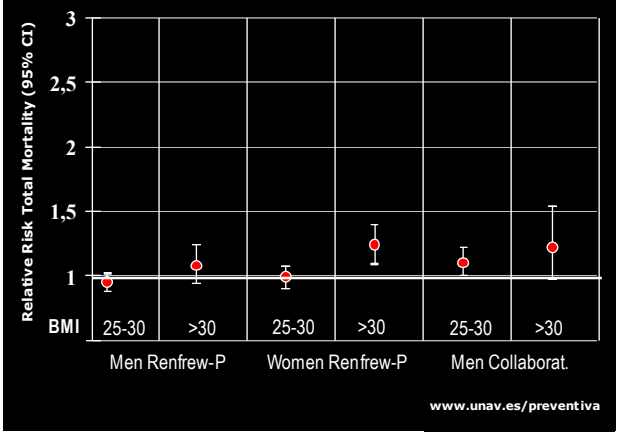
Son eslabones intermedios

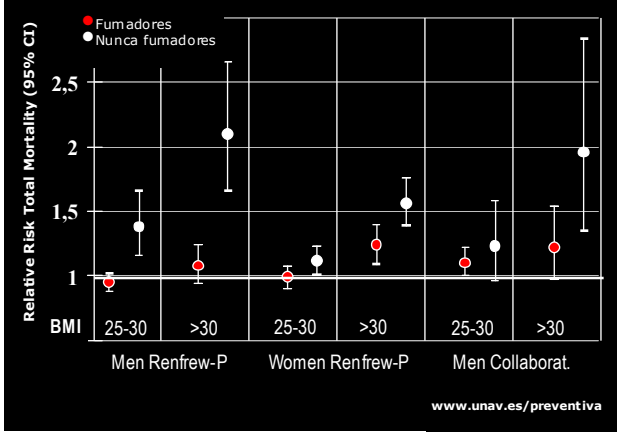
Reverse Causality and Confounding and the Associations of Overweight and Obesity with Mortality

Obesity 2006;12:2294-304.

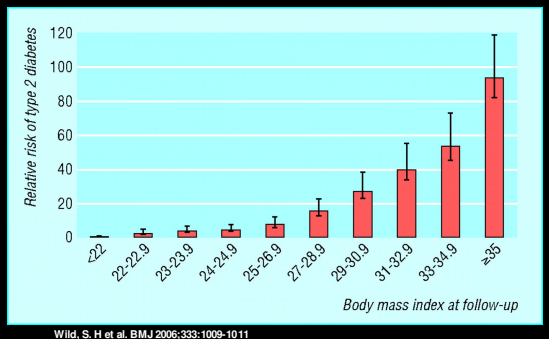
Debbie A. Lawlor, Carole L. Hart,† David J. Hole,† and George Davey Smith**

- Dirigido explícitamente a afrontar sesgos
  - Cohorte Renfrew-Paisley (inicio: 1972-76)
    - 7017 hombres y 8327 mujeres
  - Cohorte Colaborativa UK (inicio: 1970-73)
    - 4016 hombres
- Relación de IMC con mortalidad
  - ¿Qué pasa al excluir los 5 primeros años?
  - ¿Qué pasa según tabaco?
    - Fumadores
    - Nunca fumadores





Body mass index at follow-up and relative risk for type 2 diabetes in participants in Nurses' Health Study. Data derived from Colditz et al (see Further Reading box)



Wild, S. H et al. BMJ 2006;333:1009-1011

•Metabolic syndrome (ATP-3)

≥3 / 5 criteria

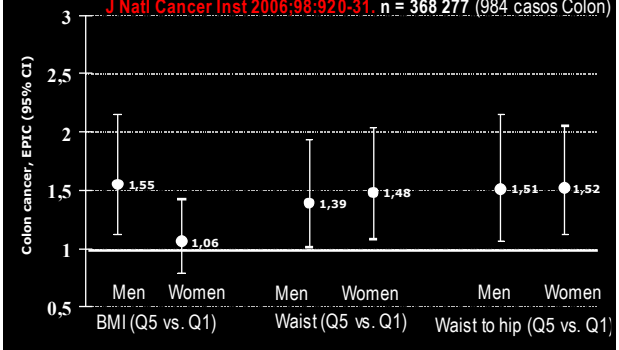
Risk Factor	Defining Level
Abdominal Obesity	Waist Circumference†
Men	>102 cm (>40 in)
Women	>88 cm (>35 in)
Triglycerides	≥150 mg/dL
HDL cholesterol	
Men	<40 mg/dL
Women	<50 mg/dL
Blood pressure	≥130/85 mmHg
Fasting glucose	≥110 mg/dL

•Metabolic syndrome (IDF):

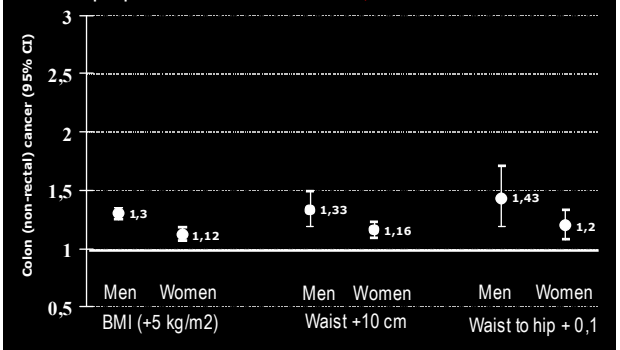
•BMI>=30 OR (Waist >=94 [men], >=80 [women]) &

+ at least 2
- **BP >= 130/85 mmHg**
- **Fasting glucose >=100 mg/dL**
- **Triglycerides >=150 mg/dL**
- **HDL<40 mg/dL [men], <50 [women]**

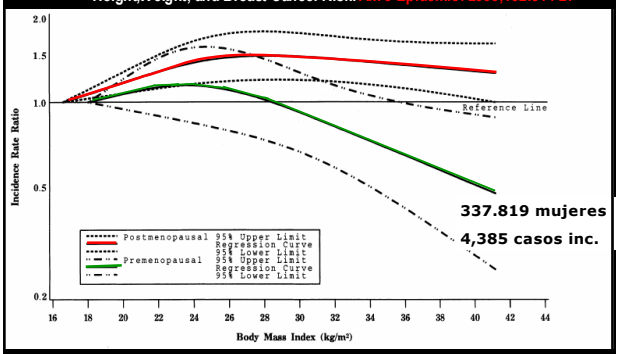
Body size and risk of colon and rectal cancer in the European Prospective Investigation Into Cancer and Nutrition (EPIC).
J Natl Cancer Inst 2006;98:920-31. n = 368 277 (984 casos Colon)



Larsson & Wolk. Obesity and colon and rectal cancer risk: a meta-analysis of prospective studies. Am J Clin Nutr 2007;86:556-65



van den Brandt et al. Pooled Analysis of Prospective Cohort Studies on Height,Weight, and Breast Cancer Risk. Am J Epidemiol 2000;152:514-27



337.819 mujeres
4,385 casos inc.

OBESIDAD

- ❑ **DEFINICIÓN**
- ❑ **EPIDEMIOLOGÍA DESCRIPTIVA**
  - EE.UU.
  - EUROPA
  - ESPAÑA
- ❑ **EPIDEMIOLOGÍA ANALÍTICA**
  - CAUSAS DE LA OBESIDAD
  - CONSECUENCIAS DE LA OBESIDAD
- ✔❑ **PREVENCIÓN Y CONTROL**

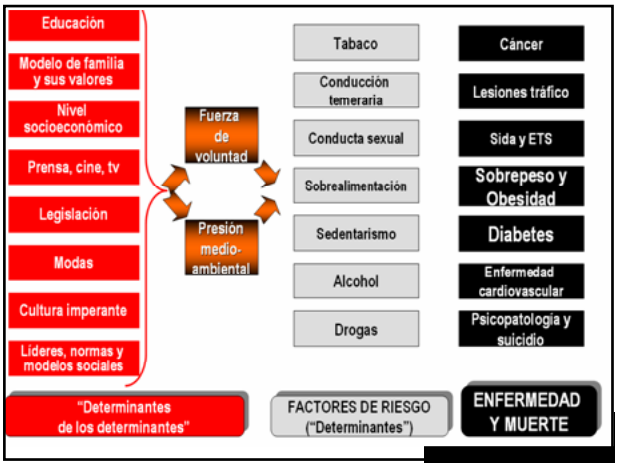
Universidad de Navarra

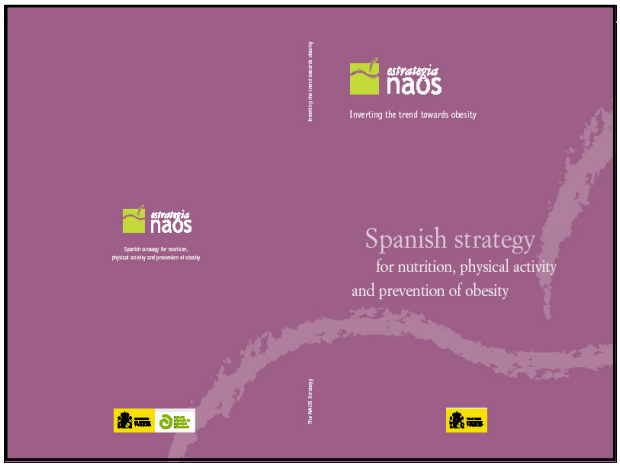
Within each diet group, some participants achieved much better weight loss than others. Participants who lost more weight attended more counseling sessions and adhered more closely to the prescribed dietary composition. These observations led Sacks et al. to conclude that behavioral factors rather than macronutrient composition are the main influences on weight loss. That is a plausible hypothesis, and it has been observed before,[6] but the present data do not allow a firm conclusion to be reached, because differences in macronutrient intake were too small.

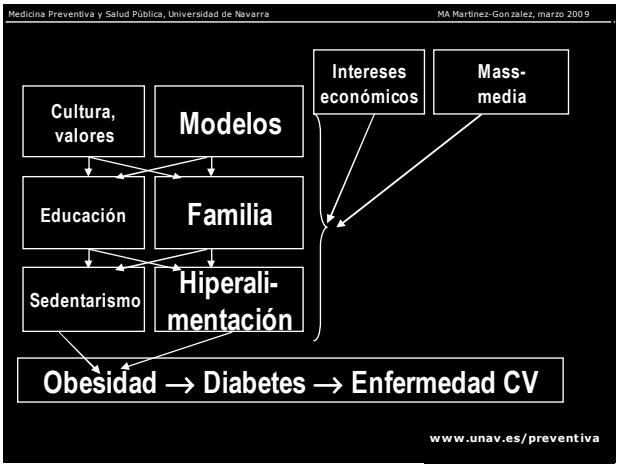
Even if the planned differences in macronutrient intake had been achieved, the absence of blinding would have made it difficult to ascribe the effect of a particular diet to protein, fat, or carbohydrate molecules. Weight-loss studies are behavioral studies; they require participants to eat less.

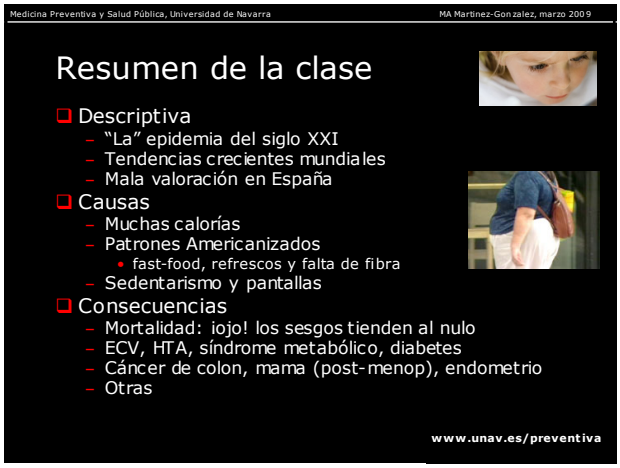
It is obvious by now that weight losses among participants in diet trials will at best average 3 to 4 kg after 2 to 4 years[10] and that they will be less among people who are poor or uneducated, groups that are hit hardest by obesity.[9] We do not need another diet trial; we need a change of paradigm.

A little-noticed study in France may point the way.[11] A community-based effort to prevent overweight in schoolchildren began in two small towns in France in 2000. Everyone from the mayor to shop owners, schoolteachers, doctors, pharmacists, caterers, restaurant owners, sports associations, the media, scientists, and various branches of town government joined in an effort to encourage children to eat better and move around


Educación
Modelo de familia y sus valores
Nivel socioeconómico
Prensa, cine, tv
Legislación
Modas
Cultura imperante
Líderes, normas y modelos sociales
Fuerza de voluntad
Presión medio-ambiental
Tabaco
Conducción temeraria
Conducta sexual
Sobrealimentación
Sedentarismo
Alcohol
Drogas
Cáncer
Lesiones tráfico
Sida y ETS
Sobrepeso y Obesidad
Diabetes
Enfermedad cardiovascular
Psicopatología y suicidio
"Determinantes de los determinantes"
FACTORES DE RIESGO ("Determinantes")
ENFERMEDAD Y MUERTE


estrategia naos
Inverting the trend towards obesity
Spanish strategy
for nutrition, physical activity
and prevention of obesity


Medicina Preventiva y Salud Pública, Universidad de Navarra
MA Martinez-Gonzalez, marzo 2009
Cultura, valores
Modelos
Intereses económicos
Mass-media
Educación
Familia
Sedentarismo
Hiperali-mentación
Obesidad → Diabetes → Enfermedad CV
www.unav.es/preventiva


Medicina Preventiva y Salud Pública, Universidad de Navarra
MA Martinez-Gonzalez, marzo 2009
Resumen de la clase
Descriptiva
"La" epidemia del siglo XXI
Tendencias crecientes mundiales
Mala valoración en España
Causas
Muchas calorías
Patrones Americanizados
fast-food, refrescos y falta de fibra
Sedentarismo y pantallas
Consecuencias
Mortalidad: ¡ojo! los sesgos tienden al nulo
ECV, HTA, síndrome metabólico, diabetes
Cáncer de colon, mama (post-menop), endometrio
Otras
www.unav.es/preventiva