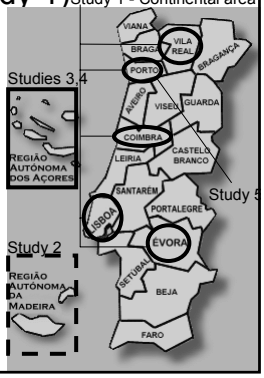
Portugal: overweight and obesity in children and adolescents

pedromoreira@fcna.up.pt

Introduction

1. No ongoing national surveillance system
2. Prevalence of Overweight and Obesity
   - 7-9-year-old from Portuguese Continent (Study 1)
   - 6-10-year-old from Madeira (Study 2)
   - 6-16-year-old from Azores (Studies 3 and 4)
   - 13-14-year-old from Porto (Study 5)
3. Determinants of overweight/obesity
4. Local applications



Methods - Study 1 (Continental area)

- Setting
  - School-based
- Convenience sample of 7-9-y-old children
  - Children attending public schools
  - Protocol approved by the Portuguese Institution of the Ministry of Education (Direcção Regional de Educação)
  - Written explanation of the purpose and design of the study
  - Written informed consent from parents/legal guardian
  - Schools were randomly selected in the districts and from each of them the participating children were selected using stratified randomization for age
  - Included: n = 4511 (2274 girls; 50.4% girls)
  - Not included: n = 336 (other countries; diseases; < 6 years)
  - Response rate: 70.6%.

Data collection: Study 1 (Continental area)

- Data collection: October 2002 to June 2003
- Trained technicians performed anthropometric measurements using internationally standardized procedures
  - Height was measured using a stadiometer (precision of 1 mm)
  - Weight was measured using an electronic scale (precision of 100 g)
- Children's parents: self-administered questionnaire
  - Family background (children’s birthweight, order of birth, breastfeeding, smoking during pregnancy, physical activity, parental BMI, parental education)

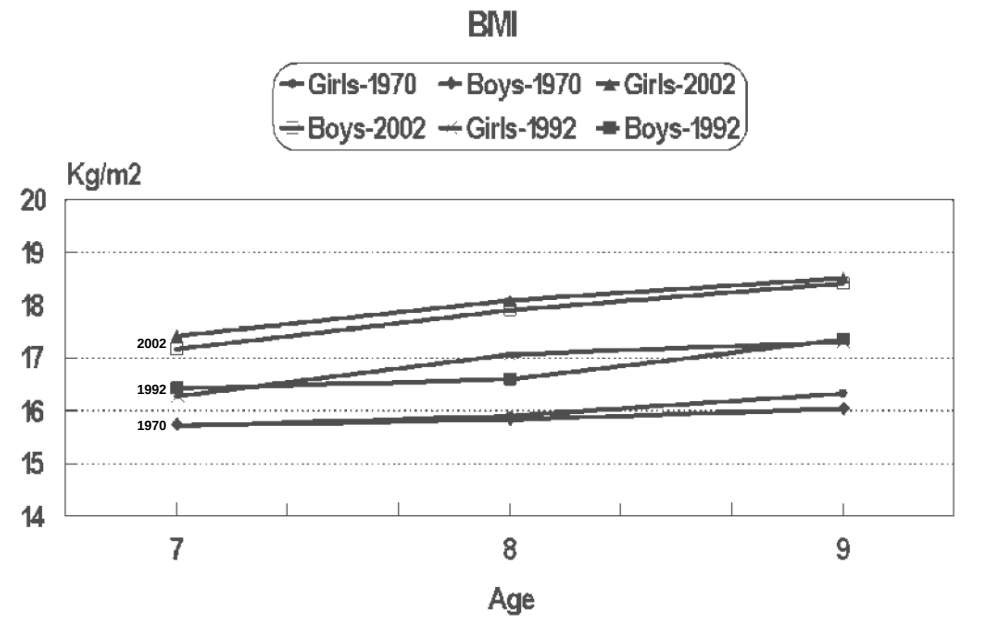
Data collection: Study 1 (Continental area)

- Children's dietary intake: 24-h dietary recall
- 2 weeks course for training and standardization of fieldworkers (nutritionists, senior students from sports and physical education and anthropology faculties)
- Overweight and obesity criteria
  - Cole *et al.* (2000)

Results – Study 1 (Continental area)

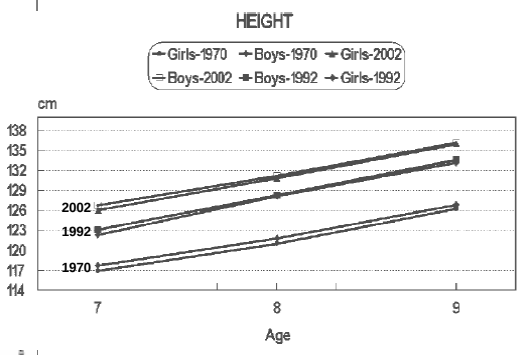
Age (years)	N	Overweight % (N)	Obese % (N)	Overweight + obese %
7				
Boys	311	17.4 (54)	7.7 (24)	25
Girls	310	19.7 (61)	14.2 (44)	33.9
Total	621	18.5 (115)	10.9 (68)	29.5
7.5				
Boys	409	17.6 (72)	10.0 (41)	27.6
Girls	421	17.6 (74)	12.1 (51)	29.7
Total	830	17.6 (146)	11.1 (92)	28.7
8				
Boys	414	18.6 (77)	10.9 (45)	29.5
Girls	397	21.4 (85)	11.8 (47)	33.2
Total	811	19.9 (162)	11.3 (92)	31.3
8.5				
Boys	407	20.4 (83)	11.8 (48)	32.2
Girls	421	21.6 (91)	15.2 (64)	36.8
Total	828	21.0 (174)	13.5 (112)	34.5
9				
Boys	379	21.1 (80)	11.3 (43)	32.4
Girls	411	24.1 (99)	8.7 (36)	32.8
Total	790	22.7 (179)	10.0 (79)	32.6
9.5				
Boys	317	19.5 (62)	9.1 (29)	28.7
Girls	314	24.2 (76)	12.1 (38)	36.3
Total	631	21.9 (138)	10.6 (67)	32.5
Total	4,511	20.3 (914)	11.3 (510)	31.5

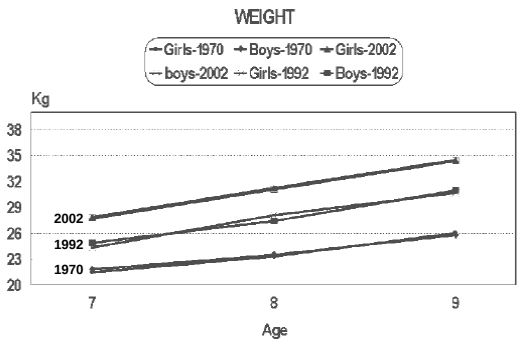
Criteria: Cole, 2000 Am J Hum Biol 2004;16:670-8



Am J Hum Biol 2004;16:670-8

Height and weight in 1970, 1992, and in Study 1





Am J Hum Biol 2004;16:670-8

Methods – Madeira (Study 2)

- Setting
  - School-based
- Convenience sample of 6-10-y-old children
  - Children attending public and private schools
  - Classes from schools were randomly selected in Madeira
    - 128 classes, 1-4th grades
    - n = 2541
      - Informed consent from parents
      - Response rate: 94.7% (n = 2407)
      - Not included: n = 23 (diseases that affect normal growth)
      - Final sample: n = 2384 (1126 girls; 47.2%)

Sousa et al.. Public Health Nutr 2006;9(7A):109

Data collection: Madeira (Study 2)

- Data collection: May 2004 to May 2005
- Trained technician performed anthropometric measurements using internationally standardized procedures
  - Height was measured using a stadiometer (precision of 1 mm)
  - Weight was measured using an electronic scale (precision of 100 g)

Sousa et al.. Public Health Nutr 2006;9(7A):109

BMI for age in 6- to 10-years-old children of Madeira (Study 2), n = 2384

Age (y)	Gender	≥ percentile 85 and < percentile 95	≥ percentile 95	Total (%)
6-10	Female Male	17.7 14.1	14.4 17.3	32.1 31.4

Classification criteria: CDC

Sousa et al.. Public Health Nutr 2006;9(7A):109

Methods – Azores study 3

- Setting
  - School-based
- Sample of 6-10-y-old children
  - Schools were randomly selected in all islands and from each of them the participating children were selected using stratified randomization in order to assure a number of subjects = 25% of all local students
  - n = 3742

Maia et al., 2002

Assessment of obesity in children of Azores (study 3)
n = 3742

Age (y)	Gender	n	Obese (%)
6	Female	269	13.0
	Male	286	11.2
7	Female	431	13.7
	Male	453	13.0
8	Female	428	11.9
	Male	464	12.5
9	Female	460	10.9
	Male	429	11.9
10	Female	241	11.6
	Male	281	8.2
TOTAL	Female	1829	12.2
	Male	1913	11.7

Criteria: Cole, 2000
Maia et al, 2002

Methods – Azores study 4

- Setting
  - School-based
- Sample of 6-19-y-old children and adolescents
  - Children attending public schools
  - Cohort study
  - Schools were randomly selected in 4 islands that represent 80% of total students from Azores
    - n=1159
    - 4 coortes (each ≈ n = 250): 6-10 y; 10-13 y; 13-16 y; and 16-19 y

Maia et al, 2006

Assessment of obesity in girls of Azores study 4 (n = 354)

Age (y)	n	Overweight (%)	Obese (%)
6-10	130	26.9	10.0
10-13	133	27.8	9.0
13-16	91	24.2	2.2

Criteria: Cole, 2000

Maia et al, 2006

Methods: Adolescents-Porto (study 5 - EpiTeen)

- Setting
  - School-based
- Design
  - Cohort study
- Sample of 13-14-y-old adolescents
  - Approved by the Ethics Committee of the São João University Hospital
  - Protocol approved by the Portuguese Institution of the Ministry of Education Adolescents attending public (n = 27) and private (n = 24) schools (teaching from the 5th to the 9th grade); allowed to reach eligible students:
    - All public schools
    - 19 (79%) private schools
  - Adolescents born in 1990 were expected to be enrolled at any of the 51 schools
  - Written explanation of the purpose and design of the study
  - Written informed consent both from parents/legal guardian and adolescents

Ramos E, 2006

Data collection: Adolescents-Porto (study 5)

- Data collection: October 2003 to June 2004
- Trained technician performed anthropometric measurements using internationally standardized procedures
  - Height was measured using a stadiometer (precision of 1 mm)
  - Weight was measured using an digital scale with a precision of 100 g

Ramos E, 2006

Adolescents-Porto (study 5)
n = 2040; adolescents born in 1990; age = 13-14 y

	Overweight	Obese	Overweight + obese
Males (n = 987)	20.8%	6.6%	27.4%
Females (n = 1053)	18.8%	5.7%	24.5%

Classification criteria: Cole, 2000

Ramos E, 2006

Association between overweight /obesity and other variables
Study 1 (7-9 y children, n = 4511; Continental area)

	Boys					Girls				
		Overweight		Obesity			Overweight		Obesity	
Factors	*N*	*n*	%	*n*	%	*N*	*n*	%	*n*	%
Paternal education										
Primary	377	59	17.8	45	14.2	395	85	25.4	60	19.4
Secondary	1321	276	23.4	142	13.6	1302	281	25	177	17.3
University	420	76	19.4	29	8.4	425	85	21.3	25	7.4
		$\chi^2=6.23$, $p=0.044$		$\chi^2=7.0$, $p=0.030$			$\chi^2=2.51$, $p=0.284$		$\chi^2=23.1$, $p=0.000$	
Maternal education										
Primary	292	48	18.3	29	11.9	342	77	26	46	17.4
Secondary	1328	262	22.3	154	14.4	1294	284	25.6	185	18.3
University	543	104	20.6	39	8.9	553	116	22.6	39	8.9
		$\chi^2=2.31$, $p=0.315$		$\chi^2=8.8$, $p=0.012$			$\chi^2=1.98$, $p=0.37$		$\chi^2=20.85$, $p=0.000$	

Acta Pædiatrica 2005;94:1550–7

	Overweight		Obesity	
Factors	OR	95% CI	OR	95% CI
Paternal education				
Primary	1		1	
Secondary	1.15*	1.08–1.21	0.91*	0.86–0.95
University	0.92*	0.86–0.97	0.42*	0.39–0.44
Maternal education				
Primary	1		1	
Secondary	1.1*	1.04–1.15	1.13*	1.08–1.17
University	0.96*	0.9–1.01	0.56*	0.53–0.58
Single child				
Yes	1		1	
No	0.76*	0.70–0.81	0.56*	0.52–0.58
Number of siblings				
1	1		1	
2	0.81*	0.75–0.86	0.59*	0.55–0.62
3	0.64*	0.58–0.69	0.44*	0.4–0.47
⩾4	0.44*	0.38–0.49	0.37*	0.33–0.4
Order of birth				
1	1		1	
2	0.85*	0.79–0.90	0.73*	0.69–0.76
3	0.68*	0.61–0.74	0.73*	0.68–0.77
⩾4	0.34*	0.28–0.39	0.45*	0.40–0.49

Factors	Overweight OR	Overweight 95% CI	Obesity OR	Obesity 95% CI
Paternal obesity (kg/m^2)				
<18.5	1		1	
18.5–24.9	0.87*	0.81–0.92	1.83*	1.8–1.85
25.0–29.9	1.15*	1.07–1.22	3.06*	3.0–3.1
⩾30.0	1.25*	1.14–1.35	7.09*	6.97–7.2
Maternal obesity (kg/m^2)				
<18.5	1		1	
18.5–24.9	1.93*	1.87–1.98	3.5*	3.47–3.52
25.0–29.9	3.23*	3.14–3.32	9.06*	8.99–9.12
⩾30.0	4.23*	4.08–4.37	18.13*	17.98–18.28
Birthweight (g)				
<2500	1		1	
2500–3000	1.18*	1.13–1.22	1.55*	1.51–1.58
⩾3000–3500	1.68*	1.62–1.73	1.87*	1.83–1.90
⩾3500–4000	2.07*	2.0–2.13	2.13*	2.08–2.17
⩾4000	2.59*	2.47–2.7	2.74*	2.67–2.8
Breastfeeding [a]				
Never	1.0		1.0	
1–3 mo	1.02*	0.99–1.04	0.86*	0.85–0.86
3–6 mo	1.05*	1.02–1.07	0.79*	0.78–0.8
⩾6 mo	0.95*	0.89–1.00	0.83*	0.81–0.84
Sleeping (h/d)				
8	1		1	
9–10	0.46*	0.40–51	0.44*	0.40–0.47
⩾11	0.44*	0.38–0.49	0.39*	0.35–0.42

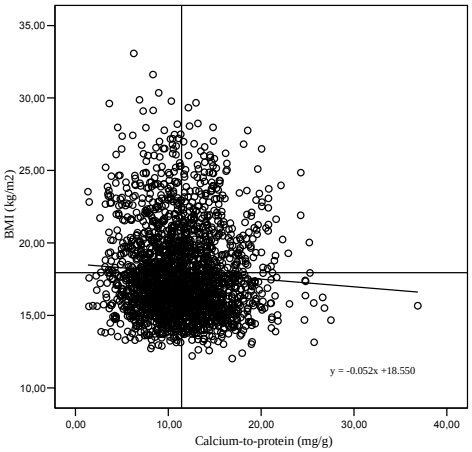
Acta Pædiatrica 2005;94:1550–7

Study 1 (Continental area)

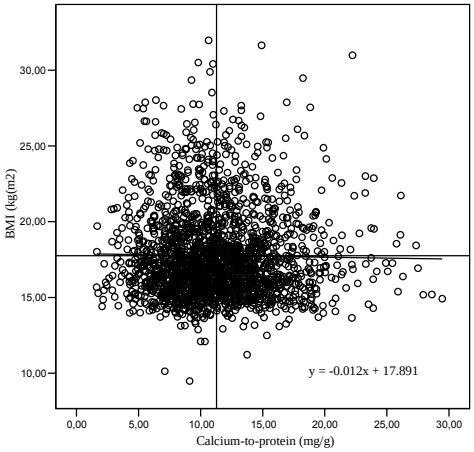
	Mean ± s.d.		
	Girls	*Boys*	P
Energy (kcal)	2529 ± 495	2690 ± 512	<0.001
Energy (%)			
Total fat	36.2 ± 6.7	35.9 ± 6.6	0.204
SFA	13.1 ± 3.3	13.0 ± 3.3	0.184
MUFA	15.1 ± 3.5	15.0 ± 3.4	0.517
PUFA	5.1 ± 1.6	5.0 ± 1.7	0.272
Protein	16.6 ± 3.7	16.6 ± 3.8	0.977
Total CHO	48.3 ± 7.9	48.6 ± 7.8	0.287
Sugars[a]	21.8 ± 7.1	22.5 ± 7.1	0.005
Protein (g/kg body weight)	3.7 ± 1.1	3.9 ± 1.2	<0.001
Fiber (g)	19.4 ± 8.2	20.2 ± 8.1	0.016
Calcium (mg)	1126 ± 419	1174 ± 430	0.002
Calcium:protein (mg/g)	11.13 ± 3.74	10.97 ± 3.79	0.253

Eur J Clin Nutr 2005;59:861-867

Study 1 (Continental area)



Girls



Boys

Eur J Clin Nutr 2005;59:861-867

Weight gain during pregnancy	Crude			Adjusted*		
	OR	95% CI	p trend	OR	95% CI	p trend
< 9 kg	1.00	(reference)		1.00	(reference)	
9-13.5 kg	1.15	0.98 - 1.36		1.12	0.91 - 1.37	
13.6-15.9 kg	1.31	1.04 - 1.65		1.20	0.90 - 1.60	
≥ 16.0 kg	1.53	1.27 - 1.84	< 0.001	1.27	1.01 - 1.61	0.038

* Adjusted for gender, age, birthweight, order of birth, breastfeeding, smoking during pregnancy, physical activity, parental BMI, parental education, calcium to protein ratio, and energy intake.

Study 1 (Continental area)

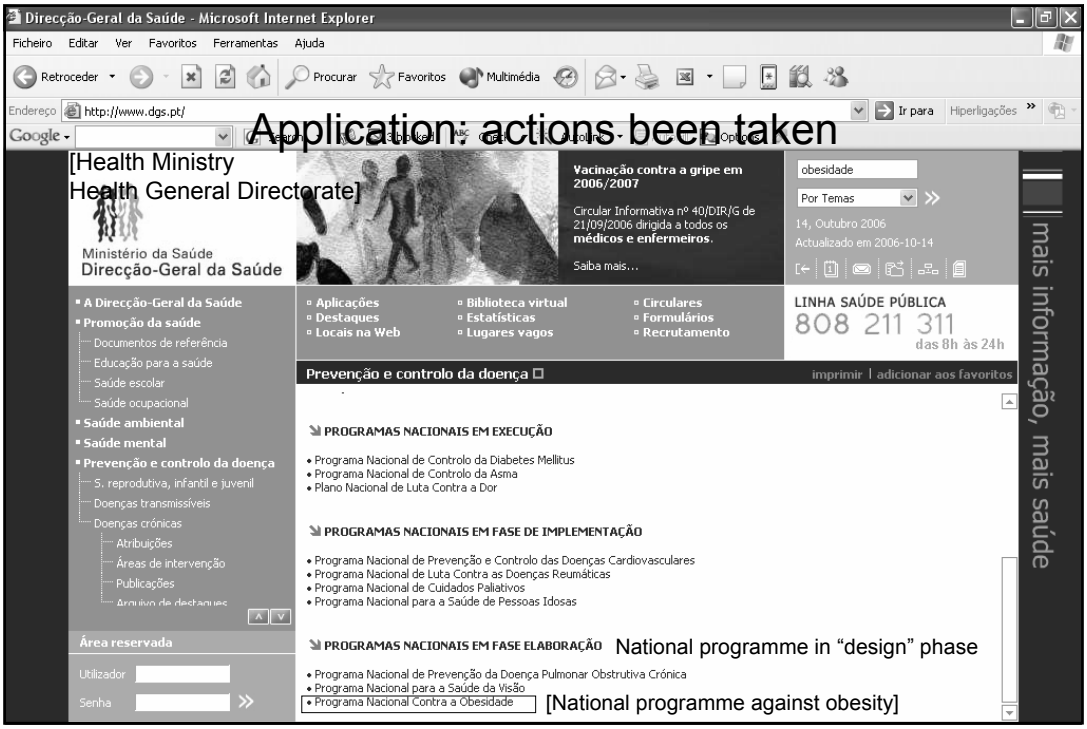
The European Journal of Public Health Advance Access published June 22, 2006

European Journal of Public Health
© The Author 2006. Published by Oxford University Press on behalf of the European Public Health Association. All rights reserved.
doi:10.1093/eurpub/ckl093

Overweight and obesity related to activities in Portuguese children, 7–9 years

Maria Mourão Carvalhal[1], Maria Cristina Padez[2], Pedro Alexandre Moreira[3], Vítor Marques Rosado[4]

Background: The purpose of the study was to explore the association among the following variables: physical activity, TV, videogames, and obesity. The study included a Portuguese random nationally representative sample of 3365 children (1610 girls and 1755 boys) 7–9 year olds. **Methods:** A general questionnaire was completed by the parents of participating children to provide information about the hours spent per week watching television, computer use and electronic games, and the participation in physical education. Overweight and obesity were calculated by using the body mass index (BMI) assessment and the cut-off points for overweight (25 kg/m^2) and obesity (30 kg/m^2). **Results:** The data from the association between BMI and the independent variables (analysis of variance) were only significant for time playing electronic games for boys and girls ($P < 0.001$; $P < 0.029$). The association between hours of watching TV and BMI was significant only for boys ($P < 0.016$). The results from the logistic regression were only significant for electronic games both for boys and girls ($P < 0.000$; $P < 0.000$). **Conclusions:** The results of this study suggest that the time spent playing electronic games is associated with obesity. Reducing childhood obesity calls for the reduction in sedentary behaviours, and the promotion of a more active lifestyle.



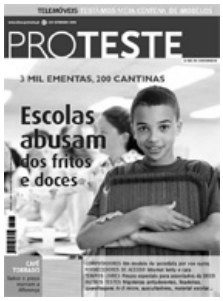
[*National plan against obesity wants better meals in schools*]

Publico, 07.02.2006

Nutritional adequacy of meals from Primary schools of Porto

Rev Alim Hum 2003;9:83-90

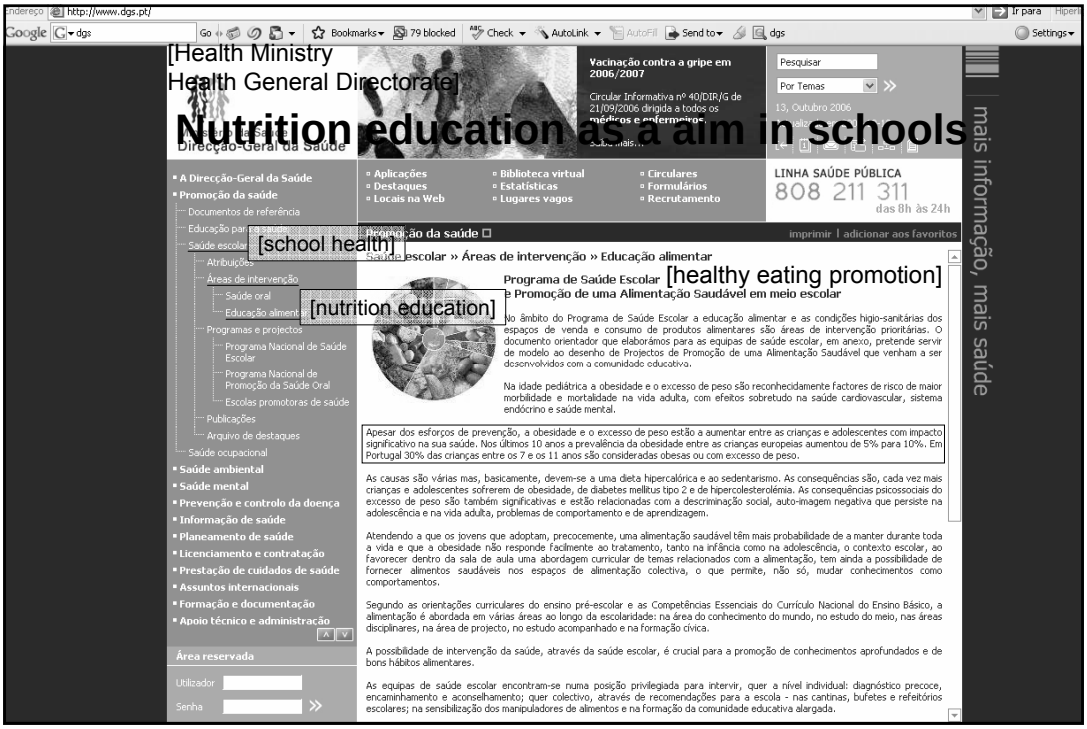
[schools exagerate in fried and high sugar foods]



Collaboration with City Hall in formulating guidelines for school meals in Primary schools of Porto

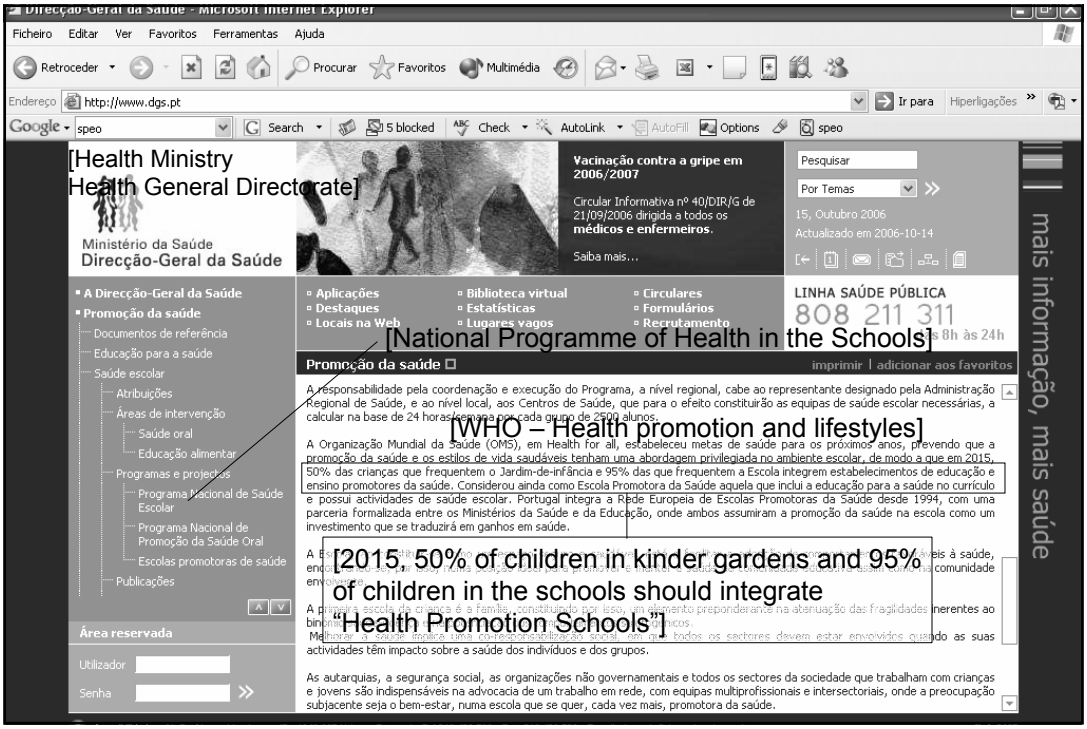
Major objectives in the Portuguese National Plan Against Obesity

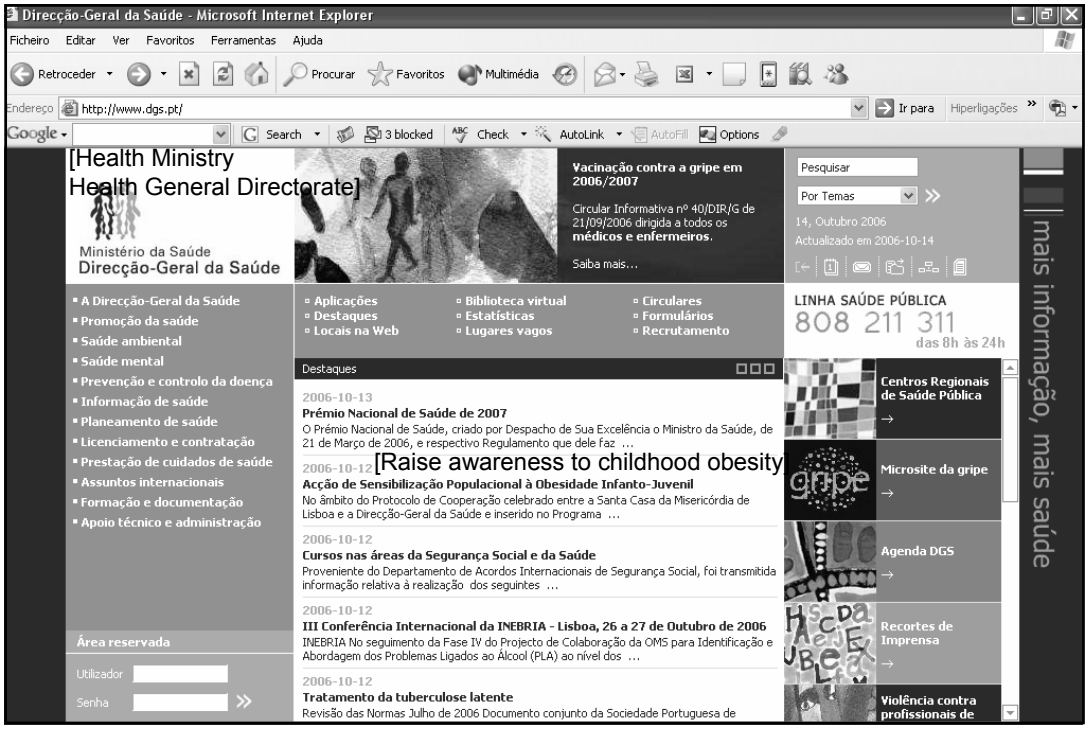
- …
- Promote in the schools the availability of energetic balanced meals
- Create technical guidelines to identify children with risk factors and to approach obesity in school environment
- Create an observatory to collect information about obesity prevalence, incidence and comorbidities
- …



Regulate food consumption in school cafeterias

- Limit high energy dense micronutrient poor foods
  - Cookies
  - Cakes
  - Chocolates
- Remove
  - Fried foods
  - Mayonnaise
  - Sugars sweetened soft drinks
  - Candies
  - Hamburgers, hot dogs and pizzas




Direcção-Geral da Saúde - Microsoft Internet Explorer
Ficheiro Editar Ver Favoritos Ferramentas Ajuda
Retroceder Procurar Favoritos Multimédia
Endereço http://www.dgs.pt/
Ir para Hiperligações
Google Search 3 blocked Check AutoLink AutoFill Options
[Health Ministry
Health General Directorate]
Ministério da Saúde
Direcção-Geral da Saúde
Vacinação contra a gripe em 2006/2007
Circular Informativa nº 40/DIR/G de 21/09/2006 dirigida a todos os médicos e enfermeiros.
Saiba mais...
Pesquisar
Por Temas
14, Outubro 2006
Actualizado em 2006-10-14
A Direcção-Geral da Saúde
Promoção da saúde
Saúde ambiental
Saúde mental
Prevenção e controlo da doença
Informação de saúde
Planeamento de saúde
Licenciamento e contratação
Prestação de cuidados de saúde
Assuntos internacionais
Formação e documentação
Apoio técnico e administração
Aplicações
Destaques
Locais na Web
Biblioteca virtual
Estatísticas
Lugares vagos
Circulares
Formulários
Recrutamento
LINHA SAÚDE PÚBLICA
808 211 311
das 8h às 24h
Destaques
2006-10-13
Prémio Nacional de Saúde de 2007
O Prémio Nacional de Saúde, criado por Despacho de Sua Excelência o Ministro da Saúde, de 21 de Março de 2006, e respectivo Regulamento que dele faz ...
2006-10-12 [Raise awareness to childhood obesity
Acção de Sensibilização Populacional à Obesidade Infanto-Juvenil
No âmbito do Protocolo de Cooperação celebrado entre a Santa Casa da Misericórdia de Lisboa e a Direcção-Geral da Saúde e inserido no Programa ...
2006-10-12
Cursos nas áreas da Segurança Social e da Saúde
Proveniente do Departamento de Acordos Internacionais de Segurança Social, foi transmitida informação relativa à realização dos seguintes ...
2006-10-12
III Conferência Internacional da INEBRIA - Lisboa, 26 a 27 de Outubro de 2006
INEBRIA No seguimento da Fase IV do Projecto de Colaboração da OMS para Identificação e Abordagem dos Problemas Ligados ao Álcool (PLA) ao nível dos ...
2006-10-12
Tratamento da tuberculose latente
Revisão das Normas Julho de 2006 Documento conjunto da Sociedade Portuguesa de
Área reservada
Utilizador
Senha
Centros Regionais de Saúde Pública
Microsite da gripe
Agenda DGS
Recortes de Imprensa
Violência contra profissionais de
mais informação, mais saúde

[Raise awareness to childhood obesity]
14.10.2006
Porto, Coimbra, Braga, Aveiro,
Castelo Branco
General –Director of Healt
Dr. F George
Millennium

FW: Regulação na publicidade para ajudar a combater a obesidade infantil - Mensagem (HTML)

Ficheiro Editar Ver Inserir Formatar Ferramentas Acções Ajuda

Responder | Responder a todos | Reencaminhar

De: webmaster [webmaster@fcna.up.pt]
Para: webmaster
Cc:
Assunto: FW: Regulação na publicidade para ajudar a combater a obesidade infantil
Anexos: Interv_regulação publicidade produtos alimentares dirigida crianças e jovens_Verdes_6-10-2006.pdf (28 KB)

Enviada: seg 09-10-2006 16:07

1st step: Approved in 12.10.2006

De: Natividade Moutinho [mailto:Natividade.Moutinho@pev.parlamento.pt] **Em nome de** Grupo Parlamentar Os Verdes
Enviada: segunda-feira, 9 de Outubro de 2006 16:04
Para: undisclosed-recipients:
Assunto: Regulação na publicidade para ajudar a combater a obesidade infantil

[Marketing regulation to fight against childhood obesity]

"OS VERDES" QUEREM REGULAÇÃO NA PUBLICIDADE PARA AJUDAR A COMBATER A OBESIDADE INFANTIL

Foi discutido na passada sexta-feira, na generalidade, em plenário da Assembleia da República, o Projecto-Lei apresentado pelo Partido Ecologista "Os Verdes" visando uma "Alteração ao código da publicidade no sentido da regulação da publicidade a produtos alimentares dirigida a crianças e jovens", com o objectivo de contribuir para combater o flagelo da obesidade infantil em Portugal.

De acordo com estudos realizados, cerca de um terço das crianças portuguesas com idades compreendidas entre os 7 a 9 anos, apresenta excesso de peso, e com frequência crianças obesas originam adultos obesos, importando prevenir esta tendência.

Não há dúvida que, de entre as várias causas que concorrem para a ocorrência da obesidade, se deve destacar a falta de exercício físico e a adopção de hábitos alimentares e dietas erradas onde predominam o consumo excessivo de gorduras e açúcar e deficiente em fibras, vitaminas, minerais e água.

Sabendo como a publicidade, designadamente a televisiva, desempenha um papel preponderante na informação e na formação dos públicos, nomeadamente nos públicos infantis e juvenis (que se estima, em média, que passem cerca de 2 a 3 horas à frente dos écrans da TV ou do computador), que são, por natureza, públicos particularmente frágeis perante a agressiva mensagem publicitária de alimentos que, na esmagadora maioria dos casos, apesar de se apresentarem muitas vezes como uma alternativa saudável, se revelam na verdade nutricionalmente desequilibradas, "Os Verdes" entendem que é fundamental criar restrições à publicidade de alimentos dirigida a crianças e jovens. [Decrease the marketing of foods to children]

Do debate, durante o qual todas as bancadas parlamentares consideraram a obesidade infantil um grave problema a combater, resultou claro, para "Os Verdes", que o que está em causa é fazer uma escolha entre o direito à publicidade, que até agora não conhece nenhuma limitação do género agora proposta, e a protecção das crianças e jovens a fim de salvaguardar o direito a uma alimentação, crescimento e desenvolvimento mais saudáveis. "Os Verdes" apelaram aos outros partidos que aprovem na próxima 6ª feira o diploma como um passo concreto para ajudar a debelar o problema da obesidade infantil.

O Gabinete de Imprensa
9 de Outubro de 2006

Approved in 12.10.2006 → Comissão Parlamentar de Saúde [Parliament Commission of Health] → Plenarium Voted

Conclusions

- High prevalence of overweight/obesity in Portuguese children
- Need for standardized childhood obesity surveillance and prevention

U.PORTO
FACULDADE DE CIÊNCIAS DA NUTRIÇÃO E ALIMENTAÇÃO
UNIVERSIDADE DO PORTO