



Socioeconomic variables and the prevalence of childhood obesity in the municipalities of Fundão, Montijo, Oeiras, Seixal and Viana do Castelo

Tâmara Andrade¹, Ana Lucia Silva¹, Carlos Ramos¹, Maria Ana Carvalho¹ and Ana Rito^{1,2},
¹ University Atlântica, Oeiras, Portugal, ² National Institute of Health Dr. Ricardo Jorge, Lisbon, Portugal

INTRODUCTION

Statistics concerning childhood overweight and obesity have shown a drastic increase of cases in the last few years in developed countries. Portugal included^{1,2}. Recently, it has been argued that the socioeconomic status (SES) of family household might be linked to the onset and evolution of obesity^{3,4}. The analysis of the relation between SES and childhood obesity is important inasmuch as knowledge of the risk factors associated with obesity is vital to improving preventive strategies⁵ in so far as it enables the identification of social groups that are potentially vulnerable to the risk of childhood obesity⁶. Portugal developed the Project Munsí as a result of a partnership between the Ministry of Health, University Atlântica and the Municipalities of Fundão, Montijo, Oeiras, Seixal and Viana do Castelo. The objective of this project was to develop new strategies and policies for the promotion of public health and the prevention and/or reduction of childhood obesity at the municipal level, particularly in local schools. The aim of this study, undertaken under the auspices of the Munsí Project, is to investigate the association or relation between the SES of families and the prevalence of obesity in children enrolled.

METHODS

The Munsí Project is a longitudinal study that was undertaken in three different stages (2008 till 2011). The present data resulted from the first phase of the project, which took place in the academic year of 2008/2009.

3173 children (6–9 years), enrolled in 167 Public Schools from 5 Municipalities were evaluated through the application of a Munsí Questionnaire and Childhood nutritional status was assessed by anthropometric parameters (weight and height) considering the Centers for Disease and Control Prevention (CDC, 2000) growthcharts percentiles of Body Mass Index (BMI), classifying as pre-obese when $P85 \leq IMC < P95$ and obese when $IMC \geq P95$. For the evaluation of the nutritional status of the school children, 39 examiners were appointed by the municipal authorities. Each examiner received training from an anthropometry specialist that was duly credited by the *The International Society for the Advancement of Kineanthropometry*, as set out in the MUN-SI's Examiners Manual.

Family SES was determined using the Munsí Family Questionnaire, answered by the families and was defined in relation to parents' educational achievement, professional occupation, socio-professional status and household income.

The Odds Ratio was calculated with a 95% Confidence Intervals.

CONCLUSION

These results showed that the SES of families is inversely associated with the prevalence of childhood obesity. New approaches on these dimensions could improve the obesity trends, enhancing families' healthy lifestyle nearby children nutrition status. Community-based programmes working at a local level as the MUN-SI Project demonstrates the importance of formulating future preventive actions to combat childhood obesity in families with lower SES.

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RESULTS

3173 children that were evaluated, 50.4 % were female, 32.1 % were overweight and 14.3 % were obese. It was observed that parents' lower academic level both socio-professional status equivalent to no qualified occupations and a family household income <1500€ monthly appear to be a significant risk factors for the development of childhood obesity ($p < 0,05$).

Level of education of father	n total	Prevalence of obesity n %	p	Non-adjusted OR (CI 95 %)	Adjusted OR** (CI 95 %)
1 st Cycle of Basic Education	239	40 16,7	0,01*	2,1 (1,2-3,4)	0,8 (0,3-2,1)
2 nd Cycle of Basic Education	430	79 18,4	0,01*	2,3 (1,5-3,6)	1,0 (0,5-2,2)
3 rd Cycle of Basic Education	576	93 16,1	0,01*	2,0 (1,3-3,0)	0,8 (0,4-1,6)
Secondary Education	517	66 12,8	0,08	1,5 (0,9-2,3)	0,8 (0,4-1,5)
University Education	348	31 8,9	V.R.	V.R.	V.R.
Post-Graduate Studies	82	8 9,8	0,81	1,1 (0,5-2,5)	1,4 (0,5-3,9)
Total	2192	317	14,5		

Table 1 - Association of level of education of father to childhood obesity

*p < 0,05
 **Adjusted for gender, municipalities, age, education level, professional occupation, socio-professional status and monthly family income

Level of education of mother	n total	Prevalence of obesity n %	p	Non-adjusted OR (CI 95 %)	Adjusted OR** (CI 95 %)
1 st Cycle of Basic Education	197	41 20,8	0,01*	2,8 (1,8-4,5)	1,4 (0,5-3,6)
2 nd Cycle of Basic Education	356	59 16,6	0,01*	2,1 (1,4-3,3)	1,3 (0,6-2,8)
3 rd Cycle of Basic Education	559	77 13,8	0,01*	1,7 (1,1-2,6)	1,1 (0,5-2,3)
Secondary Education	610	101 16,6	0,01*	2,1 (1,4-3,1)	1,6 (0,9-3,0)
University Education	457	39 8,5	V.R.	V.R.	V.R.
Post-Graduate Studies	99	9 9,1	0,86	1,1 (0,5-2,3)	1,5 (0,6-3,6)
Total	2278	326	14,3		

Table 2 - Association of level of education of mother to childhood obesity

*p < 0,05
 **Adjusted for gender, municipalities, age, education level, professional occupation, socio-professional status and monthly family income

Socio-professional status of father	n total	Prevalence of obesity n %	p	Non-adjusted OR (CI 95 %)	Adjusted OR** (CI 95 %)
Professional occupations	170	12 7,1	V.R.	V.R.	V.R.
Management/technical occupations	477	52 10,9	0,15	1,6 (0,8-3,1)	1,0 (0,4-2,2)
Qualified occupations	288	42 14,6	0,02*	2,2 (1,1-4,4)	1,4 (0,6-3,6)
Semi-qualified occupations	786	136 17,3	0,01*	2,8 (1,5-5,1)	1,7 (0,7-4,3)
Non-qualified occupations	228	40 17,5	0,01*	2,8 (1,4-5,5)	1,7 (0,6-4,9)
Total	1949	282	14,5		

Table 3 - Association of socio-professional status of father to childhood obesity

*p < 0,05
 **Adjusted for gender, municipalities, age, education level, professional occupation, socio-professional status and monthly family income

Socio-professional status of mother	n total	Prevalence of obesity n %	p	Non-adjusted OR (CI 95 %)	Adjusted OR** (CI 95 %)
Professional occupations	150	8 5,3	V.R.	V.R.	V.R.
Management/technical occupations	453	50 11,0	0,04*	2,2 (1,0-4,8)	1,4 (0,6-3,4)
Qualified occupations	393	54 13,7	0,01*	2,8 (1,3-6,1)	1,5 (0,6-3,8)
Semi-qualified occupations	631	103 16,3	0,01*	3,5 (1,6-7,3)	1,7 (0,6-4,7)
Non-qualified occupations	320	55 17,2	0,01*	3,7 (1,7-8,0)	2,4 (0,8-7,0)
Total	1947	270	13,9		

Table 4 - Association of socio-professional status of mother to childhood obesity

*p < 0,05
 **Adjusted for gender, municipalities, age, education level, professional occupation, socio-professional status and monthly family income

Family income	n total	Prevalence of obesity n %	p	Non-adjusted OR (CI 95 %)	Adjusted OR** (CI 95 %)
0-500 €	336	50 14,9	0,03*	3,1 (1,1-9,0)	2,2 (0,5-9,4)
501-850 €	429	67 15,6	0,02*	3,3 (1,2-9,4)	3,0 (0,8-11,8)
851-1500 €	609	108 17,7	0,01*	3,9 (1,4-10,8)	4,0 (0,9-14,8)
1501-2750 €	412	49 11,9	0,10	2,4 (0,9-6,9)	3,3 (0,9-11,9)
2751-3750 €	131	8 6,1	0,80	1,2 (0,3-4,0)	1,6 (0,4-6,8)
> 3750 €	76	4 5,3	V.R.	V.R.	V.R.
Total	1993	286	14,4		

Table 5 - Association between monthly family income and childhood obesity

*p < 0,05
 **Adjusted for gender, municipalities, age, education level, professional occupation, socio-professional status and monthly family income