Is maternal education associated with childhood overweight risk? Trends between 2010 and 2013- the COSI Portugal study

Joana Baleia[1], Ana Rito[1,2]

[1]CEIDSS, Sala da Pousada, Fábrica da Pólvora de Barcarena, 2730-036, Barcarena, Portugal
[2]Instituto Nacional de Saúde Doutor Ricardo Jorge, I.P., Av. Padre Cruz, 1649-016 Lisboa, Portugal

Introduction

Considerable inequalities in overweight and obesity are evident among European children[1].

Particularly in Portugal, a country with one of the highest prevalence of childhood obesity[2], understanding the most relevant socio-economical factors such as maternal education, is crucial to promote children's immediate health and well-being throughout life course[3].

Objective

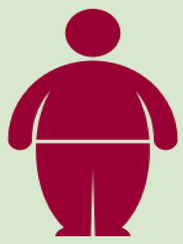
The aim of this study was to evaluate the association between maternal education and childhood overweight risk.

Methodology

Socioeconomic indicators were analysed using nationally representative data from Portuguese children and their families, collected during the 2nd (2010) and 3rd (2013) round of COSI Portugal (Childhood Obesity Surveillance Initiative/WHO Europe)[2].

Nutritional status of 3637 (2010) and 5393 (2013) children aged 6-9 years old was accessed using WHO criteria[4].

Low education level considered secondary school or below and high education level considered graduate and post-graduate school.



Results

-> More than 70% of the mothers in the two COSI–Portugal rounds had low education.

-> It was observed a significantly increase (p<0,01) between the 2nd (20,9%) and 3rd round (24%) in high education and a decrease (p<0,01) in low education (79,1%: 2010 to 74,6%: 2013) in every regions except for Algarve Region (Figure 1) .

-> High educated mothers were more frequent in Madeira (43,1%) and Lisboa e Vale do Tejo (30,8%) regions (Figure 1).

-> In 2010, Norte region had the highest frequency of mothers with low education. All of the regions decreased this frequency in average to half, except for Algarve, in 2013, showing a significant improvement on the level of education. Madeira Region was the region in 2010 and 2013 with mothers with the highest education (Table 1).

-> Maternal's low education showed a positive association with childhood overweight (including obesity) (OR=1,32; IC: 1,14-1,153) (Table 2).

Figure 1. Maternal low (secondary school or below) and high education (Graduation and post-graduation) by region (2nd and 3rd round, COSI Portugal).

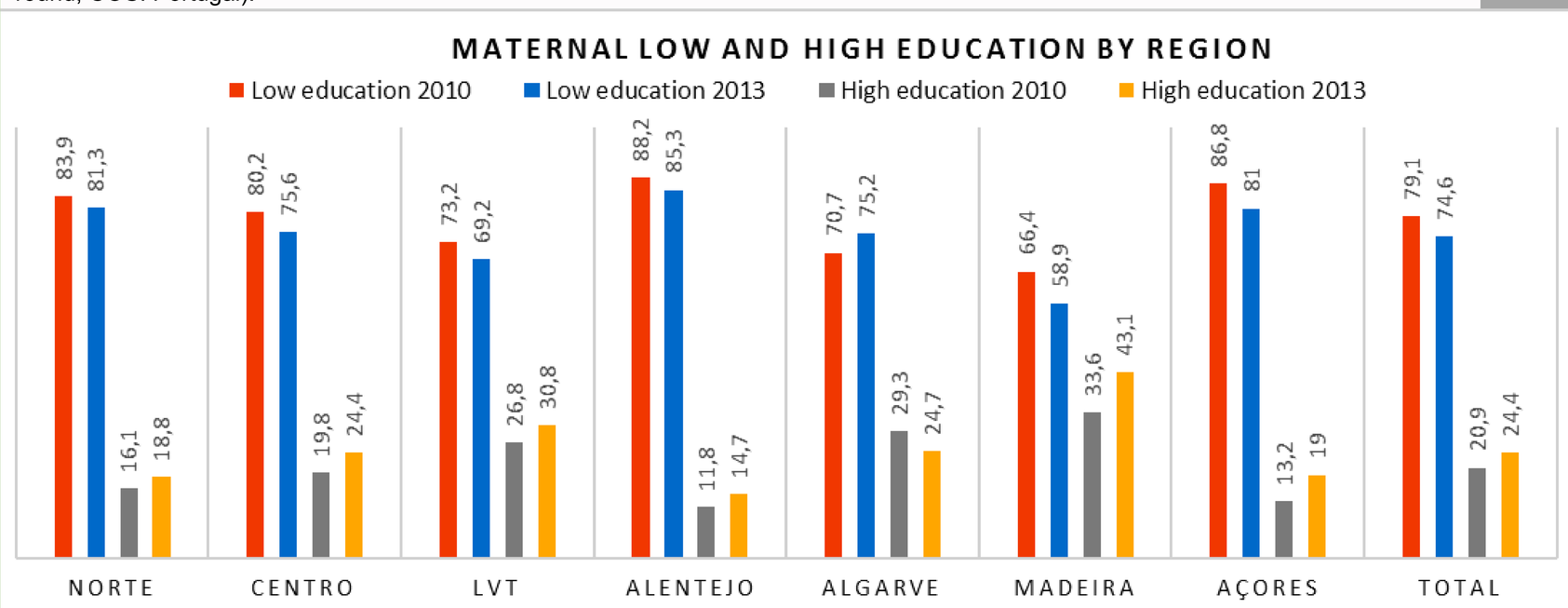


Table 1. Mother's education level (lowest and highest) by region (2010 and 2013).

	Norte		Centro		LVT		Alentejo		Algarve		Madeira		Açores		Total	
Mother's education level 2010	**N=1505**		**N=706**		**N=500**		**N=127**		**N=133**		**N=423**		**N=68**		**N=3462**	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Lowest (Primary or below)	214	16,0	54	7,6	37	7,4	18	14,2	6	4,5	39	9,2	6	8,8	374	10,8
Highest (Post-graduate)	19	1,3	6	0,8	16	3,2	1	0,8	4	3,0	15	3,5	1	1,5	62	1,8
Mother's education level 2013	**N=1456**		**N=730**		**N=1587**		**N=129**		**N=356**		**N=211**		**N=79**		**N=4548**	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Lowest (Primary or below)	116	8,0	35	4,8	60	3,8	7	5,4	16	4,5	6	2,8	8	10,1	248	5,5
Highest (Post-graduate)	22	1,5	20	2,7	67	4,2	1	0,3	8	2,2	15	7,1	3	3,8	136	3,0

The results are expressed as average or individuals number (percentage)

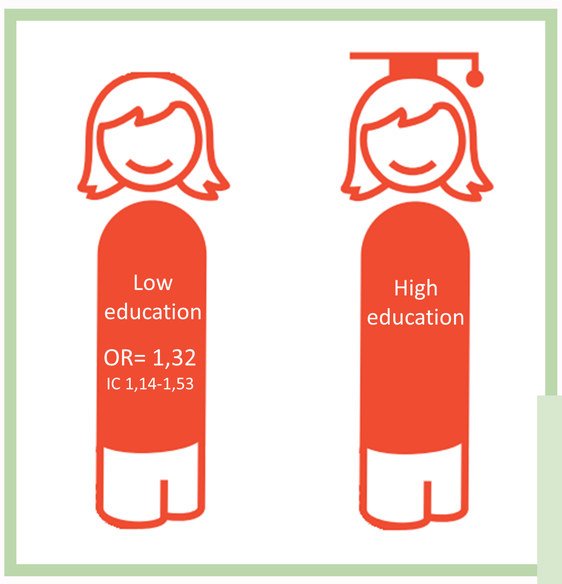


Table 2. Association between maternal education and risk of overweight (including obesity) COSI-2013.

Variables	Without overweight	Overweight	OR	IC95%
Mother education level	n	n		
Low education (n=3395)	2221	1174	**1,32**	1,14-1,53
High education (n=1153)	824	329	Ref.	---
Total	3045	1503	—	—

CI, confidence interval 95%, OR, *odds ratio*;
The results are expressed as average or individuals number (percentage)
Statistical significance p<0,05
Adjusted to gender

Conclusion

Although it was observed a positive trend regarding maternal education level, between 2010 and 2013, the majority of the Portuguese mothers had low education and this was positively associated with a greater risk of overweight children. These results support that further intervention is needed on low socio-economic families.

References

1- World Health Organization Europe. WHO European Childhood Obesity Surveillance Initiative- Implementation of round 1 (2007/2008) and round 2 (2009/2010). Trudy Wijnhoven, Joop van Raiij, João Breda. WHO (Eds). WHO Regional Office for Europe, 2014. Available at http://www.euro.who.int/__data/assets/pdf_file/0004/258781/COSI-report-round-1-and-2_final-for-web.pdf
2- Rito A; Wijnhoven T; Rutter H; Carvalho MA et al. Prevalence of obesity among Portuguese children (6–8 years old) using three definition criteria: COSI Portugal, 2008. Pediatric Obesity, 7(6), 413-422. 2012
3- Lissner L, Wijnhoven TMA, Mehlig K, Sjöberg A, Kunesova M, Yngve A, Petrauskiene A, Duleva V, Rito AI et al. Socioeconomic inequalities in childhood overweight: heterogeneity across five countries in the WHO European Childhood Obesity Surveillance Initiative (COSI–2008) International Journal of Obesity (2016), 1–7
4- World Health Organization. WHO Child Growth standards – Training Course on Child Growth Assessment. Geneva, WHO, 2008. Available: http://www.who.int/childgrowth/training/en.