

## BACKGROUND AND AIMS

Childhood obesity is one of the most serious public health challenges of the 21st century, reaching epidemic proportions<sup>1</sup>. It is currently the most prevalent pediatric disease worldwide. Countries of Central and Eastern Europe have been showing lower prevalence of overweight and obesity compared to the Southern region, where Portugal is included. Among the 5 countries from the European region with higher prevalence of childhood obesity, over 30% of Portuguese children from ages 7 to 9 are overweight and 14% of them are obese<sup>2-6</sup>, such prevalences lead to a decrease in the quality of life, with remarkable health and economic consequences. In fact, in Portugal, it is estimated that 2,8% of annual health expenditure is related to the cost of obesity<sup>7</sup>.

COSI Portugal aim is to create a systematic network for collecting, analyzing, interpreting and sharing descriptive information about childhood nutritional status of school age children (6-9 year old). A surveillance system which produces comparable data between European countries and allows the follow up of childhood obesity every 2-3 years<sup>4,8,9</sup>. COSI study is considered the largest study carried out in children, of the World Health Organization/Europe, which involves 35 countries and almost 300000 children, in which Portugal participates since 2007/2008.

## METHODS

COSI Portugal is scientifically coordinated and conducted by National Institute of Health Dr. Ricardo Jorge (INSA) along with the Directorate General of Health (DGS) and implemented regionally by the Regional Directorates of Health (ARS) of Alentejo, Algarve, LVT, Center, North, Azores and Madeira. CEIDSS (Center of Studies and Research on Social Dynamics and Health) offers technical and scientific support, specifically in the collection and data management. All Regional Coordinators were invited to actively participate in the discussion process about the methodological protocol of COSI Portugal adapted from the "Manual of Procedures of the COSI/WHO Europe" which contains in detail all the methodological procedures that must be followed equally in each COSI European country. Ethical approval was given by National Committee of Data Protection. In 2016 a new COSI Portugal sample was drawn with the help of the National Institute of Health of Italy, which gives scientific support to WHO/Europe regarding COSI data. Seven representative regional samples (children from 1st and 2nd grade from each primary school) were drawn and put together as the national COSI Portugal sample for the 4th round.

Round 4 of COSI Portugal, was implemented between March and June of 2016. All COSI examiners received a one day training in the 5 sessions that occur from North to South of the country. Collection of data was achieved by the application of children, school and family questionnaires, after which the examiners were responsible for their insertion in the Open Clinica platform. The introduction of the School inquiries data was performed by the Regional Coordinators.

| Region   | N of examiners |
|----------|----------------|
| North    | 68             |
| Center   | 25             |
| LVT      | 44             |
| Alentejo | 22             |
| Algarve  | 19             |
| Madeira  | 1              |
| Azores   | 12             |

Table 1: Number of examiners in trainees COSI Portugal 2016

## RESULTS

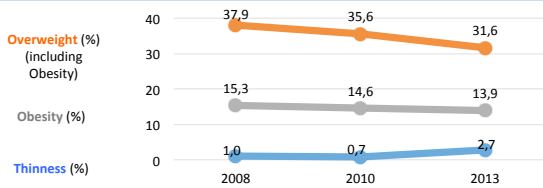


Fig. 1 - Children's Nutritional Status aged 6-8 years old, according to WHO Criteria, COSI Portugal 2008-2013

| Regions  | 2008                  | 2010        | 2013            | 2016        |
|----------|-----------------------|-------------|-----------------|-------------|
|          | Participating Schools |             |                 |             |
|          | N                     | N           | N               | N           |
| North    | 56                    | 68          | 68              | 62          |
| Center   | 60 <sup>1</sup>       | 48          | 47              | 46          |
| LVT      | 44                    | 35          | 49 <sup>2</sup> | 51          |
| Alentejo | 11                    | 11          | 11              | 19          |
| Algarve  | 5                     | 6           | 6               | 16          |
| Madeira  | 4                     | 4           | 4               | 17          |
| Azores   | 4                     | 4           | 4               | 21          |
| Portugal | 181 (95,8%)           | 176 (93,1%) | 189(99,5%)      | 232 (99,1%) |
| Classes  | 378                   | 386         | 428             | 458         |

Table 2: Participating schools and classes since 1<sup>st</sup> round in COSI Portugal

<sup>1</sup>Center collected data of 12 schools of North; <sup>2</sup>LVT asked to add one school to the national sample

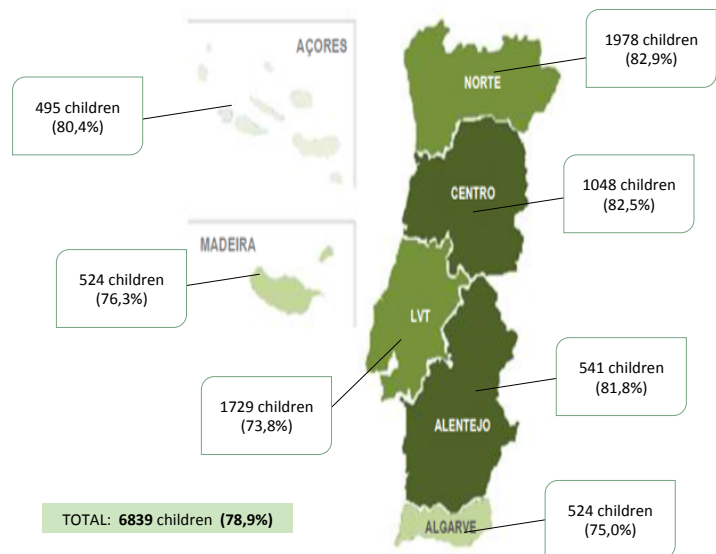


Fig. 2 - Participating children in 4th round (2016) (N= 8657)

## DISCUSSION AND CONCLUSIONS

In 2016, COSI Portugal study was carried out in the seven Health Regions where **30 Minister of Health Institutions, 32 regional coordinators** and local managers and **174 local examiners** participated. The study selected **8657 children from 462 classes of 234 primary schools**.

Comparing with previous rounds. In 2016 it was registered a higher participating rate of schools, even though the sample increased in more 51 schools since 2008. In the 4<sup>th</sup> round, 99% of schools participated. Regarding children participation, this was similar to previous rounds (2008:81%; 2010:78,6%; 2013:79,8% and 2016: 78,9%), nevertheless one must note that the 2016 sample was the biggest since the beginning: (2008: 4648; 2010:5173; 2013:7434 and 2016: 8657). The work, investment and dedication of the several institutions that have been taking part on COSI Portugal, has been highly acknowledged which is noticeable by the high response rate and excellency in the data collection.

Nevertheless the information gathered continues to position Portugal as one of the European countries with higher prevalence childhood obesity, which is extremely important for the development of regional and national health policies more adjusted to promote and enhance children's health status.

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