



ANIBES

**Determinants of
childhood obesity:
ANIBES Study**

With the participation of:



NUMBER 11

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Introduction

Prevalence rates of childhood obesity have increased alarmingly during the last decades, becoming a major public health problem associated with physical, psychological and social problems. The prevalence of overweight and obesity is high in all age groups in many countries, but it is particularly alarming in children and adolescents in developed countries and economies in transition, and it affects more severely socially disadvantaged population groups.

Updated data suggest that this epidemic progression has decreased over the past years in several countries, with heterogeneous patterns depending on the socioeconomic status, as this stabilizing progression is less evident in groups with a lower socioeconomic status.

In this regard, many studies have demonstrated the existence of a global socioeconomic gradient of childhood obesity in modern industrialized countries, with rates tending to decrease progressively as socioeconomic status increases.

Overall, overweight and obese children tend to stay obese into adulthood and are more likely to develop noncommunicable diseases like diabetes and cardiovascular conditions at a younger age.

Weight gain has been associated with different behaviors related to diet, sedentary lifestyle and decrease in physical activity. The ANIBES Study has evaluated dietary patterns and their possible clustering with physical activity, sedentary behavior and sleep time in children and adolescents from a representative sample of the Spanish population.

Childhood obesity in Spain

The prevalence of obesity in Spain is among the highest in the Organization for Economic Co-operation and Development (OECD). According to this body, one out of 3 adolescents aged 13 to 14 are overweight.

The enKid study (feeding habits and nutritional status in Spanish children and youth), conducted between 1998 and 2000, reported a prevalence of obesity among children and adolescents (aged 6 to 12) of 6.3 % (7.9 % in boys and 4.6 % in girls), with 24.4 % of this population affected by overweight and obesity.

On the other hand, the PERSEO program (program for the promotion of healthier physical activity and dietary habits in schools), conducted in 2009, showed that from 1998-2000 to 2009, prevalence increased by 1.5-4 % in all the Spanish autonomous communities, except for the Canary Islands, where rates remained high but stable (21 %).

Particularly, data from the PERSEO program yields a prevalence of obesity of 17.1 % among children aged 6 to 9 in 2009, a very similar rate to that obtained in 2010-2011 from the ALADINO study (17.6 %), which used the same criteria to evaluate a representative sample of Spanish same-age population.

The enKid study also showed a higher prevalence of overweight and obesity in males aged 6 to 13, in the south region and the Canary Islands, and it was inversely associated with the maternal educational level and the socioeconomic family status. As for factors related to early childhood, this scientific study associates birth weight over 3.5 kg and absence of breastfeeding with a higher risk for obesity.



Factors contributing to obesity increase

Data provided by the enKid study show, among others, several factors that could be related to increased overweight and obesity rates in childhood population:

- **Socioeconomic factors:** prevalence of overweight and obesity is inversely associated with the educational level and the socioeconomic family status.
- **Factors related to early childhood:** birth weight over 3.5 kg and absence of breastfeeding are associated with a higher risk for obesity.
- **Environmental factors:** a high intake of fats, as well as frequent consumption of bakery and pastry, cold meats and sugared soft drinks or low consumption of fruits and vegetables, is linked to a higher risk for obesity, together with sedentary activities for 3 or more hours per day.
- **Genetic and family environment factors:** when at least one parent is obese, children have a greater risk for being obese. Even though this influence has a genetic component, family environment and parents' physical activity and dietary habits are closely linked to those of their children.
- **Structural factors:** lack of safe pedestrian areas or spaces suitable for leisure-time physical activity or reduced access to retail venues where affordable fruits, vegetables and other fresh products can be acquired, affect physical activity and dietary habits by creating obesogenic environments.
- **Factors related to school environment:** school environment has a major role in the development of children's habits. On the one hand, this influence comes from everything that is related to consumption of food and drinks in schools, both at the school cafeteria and in different school-related events (birthday parties, rewards, incentives, etc.), apart from the available infrastructure and possibilities for practicing physical activities.

On the other hand, the implementation by the educational center of programs associated with the promotion of healthier physical activity and dietary habits, as well as the experiences shared with teachers and other pupils and groups also play an important role.

Association between lifestyle patterns and overweight

Social changes that have occurred over the second half of the 20th century have significantly affected the organization of family life around dietary habits and influenced the usual pattern of food and drink intake. Therefore, an increased consumption of processed food and foods high in calorie density, fats, free sugars or salt was observed.

On the contrary, the consumption of unprocessed foods has decreased, which means that there is a lower intake of pulses, vegetables and, to a lesser extent, fruits. To this should be added that less time is spent on buying, preparing and consuming food, and the frequency of family meals is lower.

In the children and adolescents population group analyzed within the ANIBES Study (aged 9 to 17 years), four dietary patterns were identified:

- Mediterranean like Dietary Pattern, closer to the traditional Mediterranean diet
- Sandwich Dietary Pattern
- Pasta Dietary Pattern
- Milk-sugary foods Dietary Pattern

The study showed that clustering of these four dietary patterns and physical activity, sedentary behaviors and sleep duration on weekdays allowed for the identification of two different groups:

- Unhealthier Lifestyle Pattern: characterized by low physical activity, unhealthier dietary pattern and shorter sleep duration, which included a higher proportion of girls.
- Healthier Lifestyle Pattern: characterized by high physical activity, less time spent in sedentary activities, longer sleep duration and healthier dietary pattern.



The unhealthier lifestyle pattern included a higher proportion of children and adolescents from families with a low socioeconomic status and lower levels of parental education.

These results are consistent with those referred by other studies, which have also observed behavior patterns favoring a healthier lifestyle by combining healthier dietary habits and increased levels of physical activity and less sedentary time in children and adolescents from different countries.

Long-term follow-up studies of large enough samples should be considered to evaluate changes in different lifestyle patterns and their possible association with overweight. This type of analysis is also very useful to develop intervention strategies which are consistent with the characteristics of each population group.

Factors in Lifestyle Patterns

CHILDREN

UNHEALTHIER LIFESTYLE PATTERN

HEALTHIER LIFESTYLE PATTERN

POPULATION
9-12
YEARS

SAMPLE:
207
children

CHILDREN BOYS*

*Mean ± standard deviation ** Statistically significant difference

CHILDREN GIRLS*

HEALTHIER LIFESTYLE PATTERN

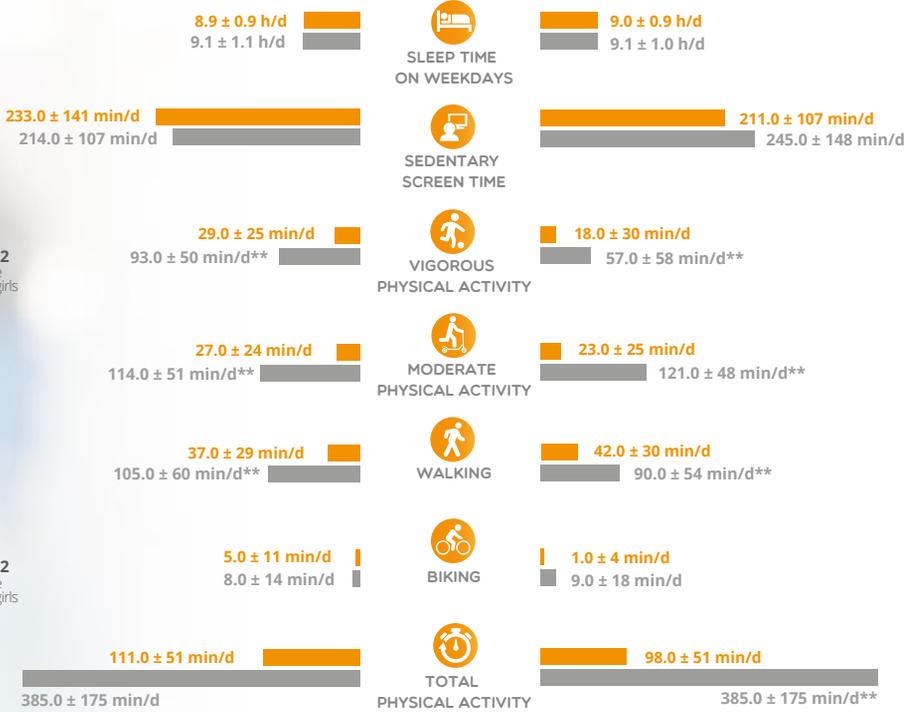
N=55

10.3 ± 1.1 mean age in children boys
10.4 ± 1.2 mean age in children girls

UNHEALTHIER LIFESTYLE PATTERN

N=152

10.3 ± 1.1 mean age in children boys
10.5 ± 1.2 mean age in children girls



Factors in Lifestyle Patterns

ADOLESCENTS

● UNHEALTHIER LIFESTYLE PATTERN
● HEALTHIER LIFESTYLE PATTERN

POPULATION
13-17
 YEARS

SAMPLE:
208
 adolescents


 ADOLESCENT BOYS*


 ADOLESCENT GIRLS*

*Mean ± standard deviation ** Statistically significant difference

HEALTHIER LIFESTYLE PATTERN

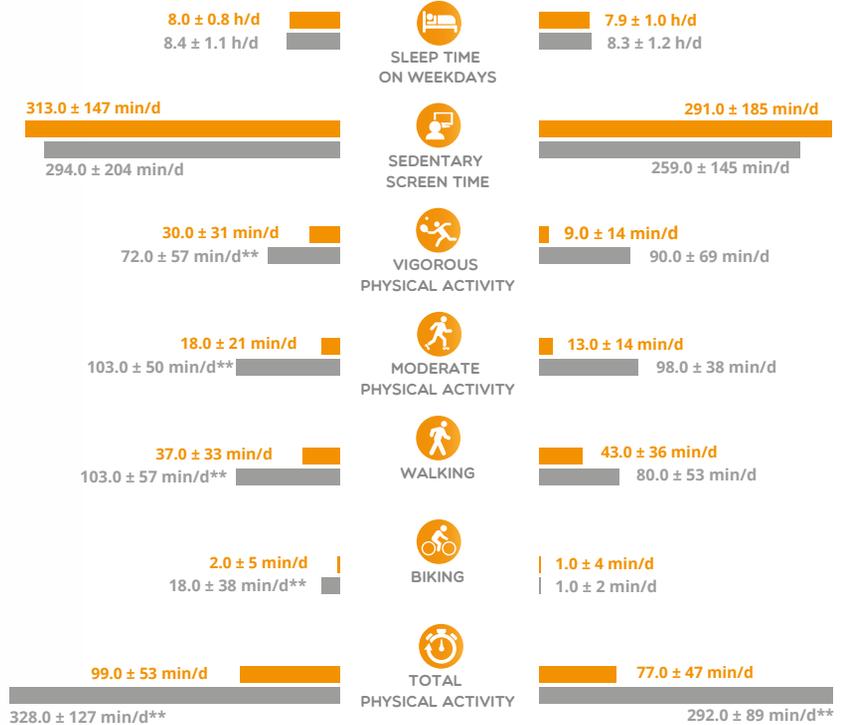
N=41

 
14.9 ± 1.5 mean age in adolescent boys
15.9 ± 1.0 mean age in adolescent girls

UNHEALTHIER LIFESTYLE PATTERN

N=167

 
15.2 ± 1.5 mean age in adolescent boys
14.9 ± 1.5 mean age in adolescent girls



References

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The final protocol of the ANIBES scientific study was previously approved by the Clinical Research Ethics Committee of the Autonomous Region of Madrid (Spain).

