



Parental nutrition knowledge, geographical area and food habits in Italian schoolchildren: is there a link?

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Abstract

Child obesity is growing constantly and its prevention is still one of the main public health targets, but unfortunately not all the factors of the phenomena are well understood yet. Parents, particularly mothers, play a key role in what and how much children eat, so they might also play a leading part in obesity prevention. This study investigates parental nutrition knowledge in order to evaluate its importance. For this purpose, in 2009 a representative sample of 2,193 8-9 year old children was measured in 3 geographical areas of North, Center and South Italy. Nutritional status, food habits, lifestyle and parental nutrition knowledge were evaluated. 9.8% of children were obese, 13.5% in the South, 10.2% in the Centre and 5.9% in the North. 32.7% of the parents showed good nutrition knowledge level, this knowledge was statistically associated ($p=0.001$) with the geographical area: 40.9% in the North 35.1% in the Centre and only 21.3% in the South.

An association ($p=0.001$) between the information about breakfast and actual frequency of consumption was found: when a parent considers this meal as “quite important” we observed that 48.6% of the children have breakfast every day vs. 82.0% of children raised in families where this meal is considered “very important”.

When parents think vegetables should be eaten “more than once a day” we observe that the percentage of children eating vegetables at least twice a day (18.4%) is visibly higher ($p<0.001$) if compared with those whose parents consider “once a day” to be enough (5.4%); whereas when the parents assess the recommended portion as “1-2 times a week” this percentage drops to 0.8%.

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Even if further analyses are needed to confirm these findings, we can affirm that it is very important to run in-depth studies to better understand the home environment in which children are raised in order to develop adequate programs cut on parents' nutrition knowledge and background, otherwise the interventions may not be as effective as they should be.

Keywords: Child Obesity, Nutrition Knowledge, Food Habits

1. Introduction

Child obesity has reached worrying levels worldwide (WHO, 2008), both in Europe and in Italy (Branca et al., 2007). Among European school-age children, Italians showed one of highest obesity prevalence (Branca et al., 2007; Spinelli et al., 2011 and 2012). It is a condition caused by different factors: genetic, cultural and environmental, but mainly behavioral. It represents a tremendous burden for children, their families and society and its prevention is one of the main goals for public health. Unfortunately all the factors of the phenomena are still not well understood. A large body of research has found genetic links between parents and child obesity (Day et al., 2011, Wardel et al., 2008) but relatively little research has assessed the role of family nutrition awareness.

Childhood is a vital period for the acquisition of healthy lifestyles and food habits, as it has a huge influence on reducing risk factors for chronic diseases. In this phase children are dependent on their families to form life-long lifestyle and food habits. Parents, particularly mothers, play a key role in what and how much their children eat, so they might also play a primary role in obesity prevention (Spinelli et al., 2009). Parents' behavior influences children's long-term energy balance and weight status (Faith et al., 2012). They influence children's food preference and intake pattern through the food they make available, child feeding practices and their own eating behavior (Vereecken et al., 2004; Hebestreit et al., 2010). The family environment includes socio-demographic factors: consistent evidence shows that people with a low socio-economic status show worse nutritional conditions, with several aspects being able to affect food consumption: nutritional knowledge, nutritional budget or nutritional behavior (Fernández-Alvira et al., 2012; Turrel et al., 2003; Galobardes, et al.,

2007).

This study investigates parental nutrition knowledge in order to evaluate its role in child nutrition and the state of the art in different Italian geographical areas.

2. Methods

The "OKkio alla SALUTE" study (Spinelli et al., 2009), carried out under the supervision of the Italian National Institute of Health, stated the need for an in-depth study on food habits and lifestyle in children aged 8-9 years. On the basis of the results of this study the Italian territory was divided into 3 geographical areas – North, Centre and South – defined by low, medium and high prevalence of obesity. For this purpose alone, the Zoom8 study in 2009 investigated a representative sample of 2,193 8-9 year old children in the North (Friuli Venezia Giulia and Liguria), Centre (Marche and Lazio) and South of Italy (Calabria and Sicilia).

The ponderal status was evaluated by Body Mass Index on the basis of weight and height collected by trained personnel. Data collection was run by "OKkio alla SALUTE study" (Spinelli et al., 2009) shared protocol, based on international procedures (WHO, 1995) and international cut-off (Cole et al., 2000) for data interpretation.

An "ad hoc" questionnaire was given to the parents in order to collect information about their nutrition knowledge and to collect information about children's food habits and lifestyle.

The questionnaire consists of a series of questions on families' socio-economical status, parental nutrition knowledge, children's lifestyle (computer, television watching and sport or playground activities), parental lifestyle plus a section about children's food consumption

frequency. The family nutritional knowledge level was obtained by giving a score to each question about nutritional information. The parents' level of knowledge about child nutrition was investigated with a series of questions about the importance of breakfast, the ideal breakfast, the eligible drink for a child, the importance of after sport snacking, the recommended frequency of fruit and vegetable consumption and how they consider, from a quantity and adequacy point of view, a fruit and /or yogurt snack. These questions were evaluated one by one and were also used to give a score to each item of parental nutrition knowledge. On the basis of this score the parents were divided into 3 groups with a low, middle and good nutrition knowledge.

The study project was submitted and approved by the ethics committee of the Italian National Institute of Health; each child was enrolled in the study only after their parents had been informed of the aim and the content of the study and had signed their written consent.

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The statistical processing was carried out with Stat Soft 6.0; frequencies, means and standard deviations were calculated for all the variables. The analysis on the associated risk factor was carried out by testing the significativity through the Chi squares test. The statistical significance was considered for p values <0.05.

3. Results

In the sample 9.8% of obesity was registered, with a gradient in the 3 geographic areas: 13.5% in the South, 10.2% in the Centre and 5.9% in the North.

From the analysis of parental general nutrition knowledge (Figure 1) we found out that 32.7% of the sample showed good knowledge, 54.0% medium and 13.3% low. This knowledge was statistically associated (p=0.0001) with the geographical area: in the North 40.9% of the parents presented a good level of knowledge,

35.1% in the Centre and only 21.3% in the South. In the 3 areas we registered also a difference (p<0.001) in the mothers' educational level: in the North 50.9% of mothers had a secondary school qualification and 18.2% a degree; in the Centre 53.2% had a secondary school qualification and 19.5% a degree and in the South 42.2% had a secondary school qualification and 14.8% a degree.

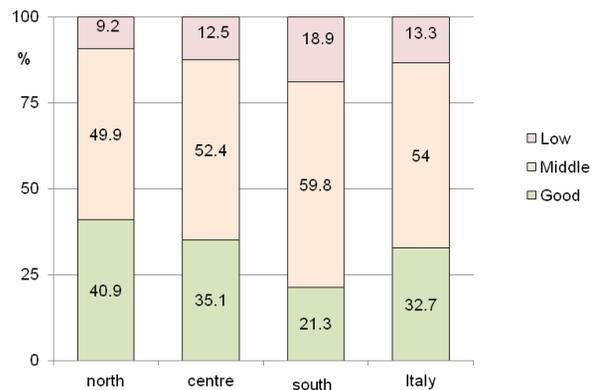


Figure1. Nutritional Knowledge.

In-depth analysis carried out on single aspects showed a good outline on breakfast information (Figure 2): 93.1% of parents recognized it as a “very important meal” and 93.8% recognized a “cup of milk with bread and jam” as the proper breakfast, with no differences in the 3 geographical areas.

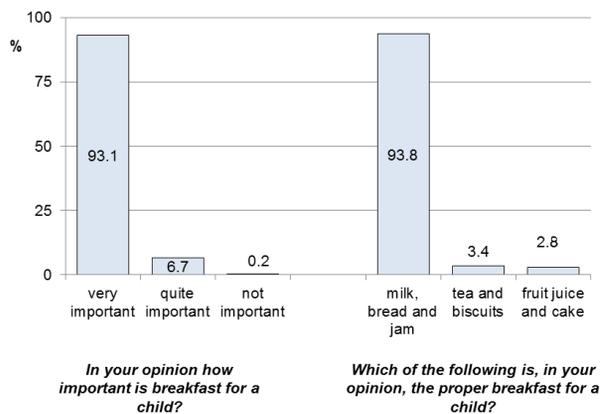


Figure 2. Knowledge about breakfast.

Yogurt and fruit, as a snack for morning and/or afternoon break, were considered enough

in quantity by 79.3% of the parents and adequate in nutrients by 82.7% of them, with no geographical differences (Figure 3).

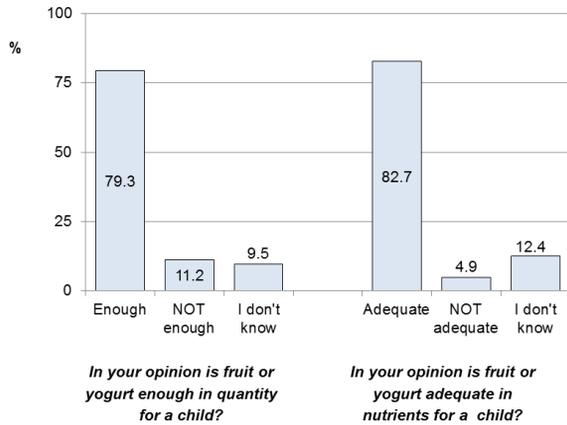


Figure 3. Knowledge about yogurt and fruit as snack for morning or afternoon break.

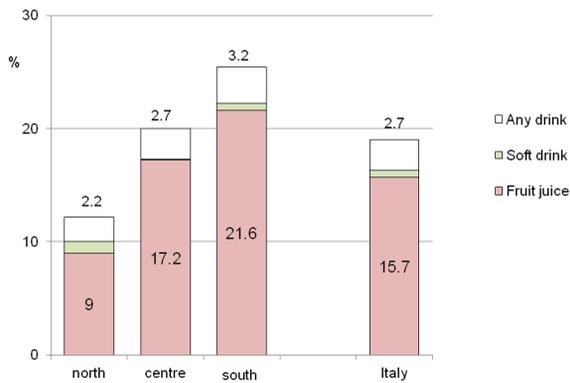


Figure 4. Knowledge about eligible drink for children (excluding water), divided by geographical areas.

Water was considered the eligible drink for children by 81.5% of their parents, 88.7% in the North, 80.1% in the Centre and 75.1% in the south, with statistical differences (p=0.001). On the other hand, fruit juice was considered suitable for children by 21.6% of parents from the South, 9.0% from the North and 17.2% from the Centre (Figure 4).

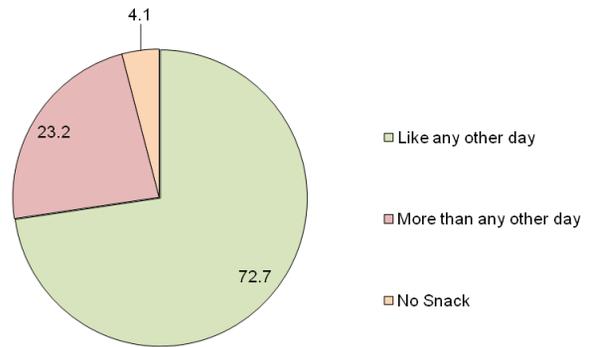


Figure 5. Knowledge about snacking after sport.

4.1% of parents think that no snack is necessary for children after sport, 23.2% think the children need a heavier snack on sports days than other days, and 72.7% think that the after sport snack should be the same as for other days (Figure 5). This opinion does not show any differences in the geographical areas.

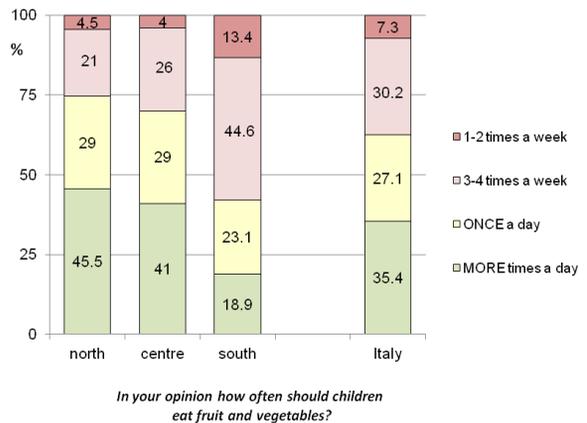


Figure 6. Knowledge about vegetable eating frequency.

35.4% of parents understands that children should eat vegetables several times a day, with differences among areas (p=0.001): 45.5% in the North, 41.0% in the Centre and only 18.9% in the South (Figure 6). In the southern regions a fair amount of parents (44.6%) believed that eating vegetables just 3-4 times a week is enough.

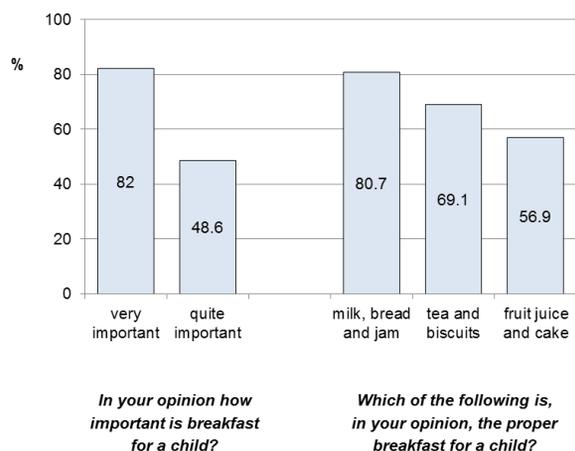


Figure 7. Everyday breakfast frequency consumption on the basis of parental knowledge about breakfast importance and adequacy.

Crossing parental nutrition knowledge with food habits, we discovered an important association ($p=0.001$): when a parent considered this meal as “quite important” the percentage of children having breakfast everyday was 48.6%, when the parent believed breakfast is “very important” this percentage increased to 82.0% (Figure 7). Therefore, dividing the sample on the basis of what the parent considered the right breakfast, we found out a different ($p=0.001$) percentage of children that had breakfast everyday: 80.7% of them had a parent who thinks that “a cup of milk with bread and jam” is an adequate choice, 56.9% “fruit juice and cake” and 69.1% “tea and biscuits”.

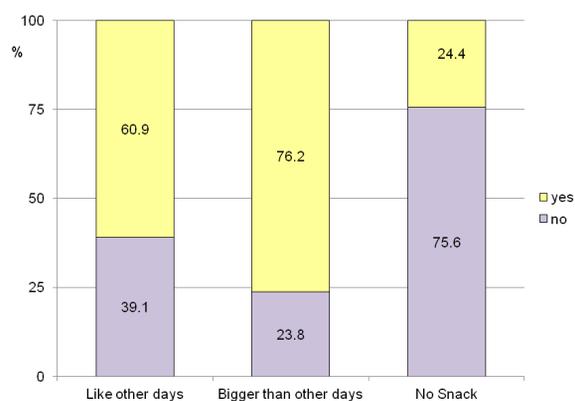


Figure 8. After sport snack consumption divided by parental knowledge.

If families thought that snacking after sport

has to be heftier than on normal days the percentage of children showing this habit was 76.2% (Figure 8). When parents think that snacking should not be different from any other day this percentage was 60.9%, and 24.4% with parents stating that there should be no snack at all after sport. These percentages were statistically different ($p=0.001$).

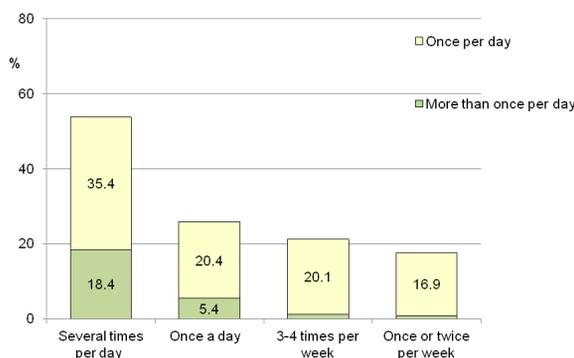


Figure 9. Vegetable frequency consumption (once or more a day) divided by parental knowledge.

When parents know that vegetables have to be consumed several times a day we had a higher ($p=0.001$) percentage of children eating vegetables (Figure 9) twice a day (18.4%) in comparison to those who thought it “is enough to eat them once a day” (5.4%) and who considered that “it is enough to eat them 1-2 times a week” (0.8%).

The perception that there were a number of obstacles (economic, preparation time and availability) to vegetable consumption showed an association ($p<0.005$) with eating frequency: children coming from families where a parent feels that there was some obstacle to eating vegetables at least one per day were 59.4% vs. the 74.6% of those who thought there was no obstacle to vegetable consumption.

4. Discussion and conclusions

In this study we investigated the association between parental nutrition knowledge, food habits and some dietary and lifestyle behaviors among children living in 3 different Italian geographical areas, with different prevalence of overweight/obesity.

In our sample a total of 9.8% of obese children was registered, with a similar North-South gradient highlighted by the OKkio alla SALUTE survey (Spinelli et al., 2012): 13.5% in the South, 10.2% in the Centre and 5.9% in the North. An association between parental nutrition knowledge and geographical areas was found. In the South of Italy parents showed the worst situation with regard to general knowledge and the single aspect of nutrition. Several studies show that nutrition knowledge seems linked to children's nutritional habits (Vereecken et al., 2004; Sausenthaler et al., 2007; Fisher et al., 2002): parents influence children's food preferences and intake pattern through the food they make available, the types of child feeding practices and their own eating behavior.

In our sample an association between vegetable frequency consumption and parental knowledge was found, the same was found in another Italian study (Grosso et al., 2012) in which a direct linear effect was shown for vegetable consumption and nutrition knowledge. On the other hand we found an association between vegetable frequency consumption and the parents' feeling that there are some obstacles to consuming them (economic, preparation time and availability). This seems to confirm that the parental attitude is one factor which addresses children's food preferences – as suggested by Wyse et al. (2011) and Grosso et al. (2012) – acting like role models for food intake (Fisher et al., 2002) or providing available food in the home (Birch et al., 2001).

Looking also at the general situation we can state that children coming from families with a good nutrition knowledge show good food habits: breakfast, vegetable and snack frequency consumption, confirming the idea that parental information can have a positive role in children's food habits (Grasso et al., 2012; Sausenthaler et al., 2007).

In Italy several studies based on nutrition education were developed and majority of them were targeted at schools (Capacci et al., 2012). But the main problem of the majority of these nutrition intervention studies is at the level of impact evaluation: not all the studies, in fact, show results that can be easily evaluated while some of them are based only on a specific aspect

of food habits that are, on the contrary, easier to evaluate (Zappalà et al., 2008, Dulcetti et al., 1997). In general is difficult to evaluate the impact of one nutrition program and it may take several years to do so.

If further analysis is needed to confirm our findings, we can suggest that it could be important to run in-depth studies to better understand the home environment where children are raised in order to develop adequate programs on nutrition beliefs. It is not easy to plan an adequate nutrition program but it is advisable to include parents in these schemes, as their participation may have an impact on the final result.

Moreover, the study showed different parental nutrition knowledge in the diverse geographical areas of Italy suggesting the importance of intervention policies that will take into account territorial and environmental specificity.

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