Original article

Mothers' perceptions on their child weight: a descriptive study

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Summary. *Background and aim of the work:* Obesity is considered to be the most important nutritional disease among children in the world. This descriptive study examines the relationship between child effective weight and their mothers' perceptions. *Methods:* A descriptive study was performed to investigate mothers' perceptions' on their weight children. Each school child was assessed in his weight and high. Body Mass Index values were evaluated and percentile classes were identified. Two questions were asked to their mothers in order to understand their perception on their child weight and if this condition could influence the future weight of their sons. *Results:* A total of 105 schoolchildren and their mothers were enrolled in this study. Of these, 7.62% (n=8) of the children were underweight, 42.86% (n=45) were normal weight, 22.86% (n=24) were at risk to become overweight, indicated as "AROW", 26.67% (n=28) were overweight. Sperman correlation showed statistically significance with mother's awareness and their child's weight status ($p<0.001$) and with the underestimation by mothers as regards child's weight status ($p<0.001$). *Conclusion:* Mothers perceived their child's weight well but at the same time were not worried about weight and a future problem of overweight or obesity.

Key words: Mother Perception, Schoolchildren Overweight, Schoolchildren Obesity, Weight Status, Weight Perception.

Introduction

Obesity is considered to be the most important nutritional disease among children in the world. An estimated 15% of 6- to 11-year-old children are overweight. Overweight and obesity in childhood are known to have significant impact on both physical and psychosocial health. For example, hyperlipidaemia, hypertension, abnormal glucose tolerance and type 2 diabetes occur with increased frequency in obese children and adolescents. In addition, obesity in childhood is known to be an independent risk factor for adult obesity. Most of the current literature report that the risk of developing adult obesity (Body Mass Index, BMI>30) in children aged >9 years who are obese (defined as BMI above the 95th percentile for weight), is up to 80% at age 35 years. Furthermore, there is evidence of an association between adolescent obesity and increased risks for health in adult life (1-3). For example, Parkinson et al. founded that adolescent overweight predicted a broad range of adverse health effects that were independent of adult weight(4). Intervention and strategy development, however, have largely overlooked the views of potential participants. Most important could be considered the health promotion and the increasingly programmes aimed to promote the health of children with their parents. Research of community perceptions and recommendations for obesity prevention has focused on: children's perceptions of body image, of how healthy both thin

and overweight children are (5), and professional and maternal recommendations for obesity prevention in pre-school children and adolescents (6-8).

Moreover, the best preventing programs in the child obesity field necessary required parental participation. This participation, in turn, will depend on mothers' ability to recognize that their child is overweight, to understand that obesity puts the child at risk for associated short-term and long-term health problems, and to provide healthy and balanced meals that will help their child lose weight. Mothers do not typically consult growth charts to determine whether a child is overweight. Instead, they notice when a child becomes inactive or suffers from teasing by other children. Mothers may tend to define obesity as a condition accompanied by severe physical impairment, especially compromised mobility. They may also believe that a child's size is inherited and that the child will eventually shed excess weight with age. Whereas we know that parental participation is vital for successful obesity treatment programs. Additionally, we know less about how well mothers recognize obesity in their own children. Before instructing mothers about dietary and exercise regimens, clinicians must first verify that mothers know when they have a child with a weight problem and why they need to be concerned (9-11).

This study aims to investigate maternal perceptions on their child's weight and to assess their opinions about child overweight and their health future weight status.

Materials and Methods

Weight status assessment

Since in childhood the Body Mass Index (BMI) values are characterized by a considerable variability, linked above all to sex and age, it is strongly recommended to use the percentile values. At the international level it well adopt, the percentiles proposed by Cole and coll.(12) whose interpretation is based on the following reference values:

– Underweight: lower than the 5th percentile;
– Novrmal: from the 5th to the 85th percentile;
– At risk of being overweight (AROW) from the 85th to the 95th percentile;
– Overweight: above the 95th percentile.

According to the World health Organization (WHO), the growth of children aged 5 to 19 years is assessed through the WHO Child Growth Standards. These standards were developed using data collected in the WHO Multicentre Growth Reference study.

It is therefore possible to calculate the growth percentiles based on the weight and height of the child and compare them with the child's growth curve. The percentiles or percentile diagrams are the units of measurement used by the WHO to determine how the child grows in weight and height.

The percentiles are made by taking groups of 100 children of the same age as comparison, divided according to weight and height and subsequently inserted into 100 subgroups.

The use of percentiles allows to establish the child's growth curve and therefore to discard any problems related to physical development.

Design

A descriptive cross sectional study was conducted to evaluate how mothers perceive their child's body weight. This study is part of a health education project, healthy eating and physical activity incentives, promoted in schools in the Modugno, Bari, in the Southern of Italy.

The Investigation

During the 2014/2015 school year, the weight and height were collected in the children attending the IV elementary class of the first circle and the BMI values and the relative reference percentiles were calculated. Therefore, the calculated percentile values have been grouped into 4 groups, according to the indications above.

Subsequently, during a meeting to present the project, parents were asked to answer to two questions relating to the perception of their child's body weight. Specifically, the questions were:

1. "How would you describe your child's weight at the moment?"
2. "How worried are you about your child becoming overweight in the next future?"

For each answer a Linkert scale was associated from 1 to 5 values as: very underweight, underweight, normal, overweight or very overweight, for the first question; and from 5 to 1 values as: unconcerned, a little concerned, concerned, fairly concerned, very concerned, for the second question.

Participants

This descriptive study included children who attend the fourth grade of the first circle of the abovementioned primary school and their relative parents.

An invitation to participate in this study was proposed to potential participants and their parents, indicating all information about the study.

Participation was voluntary and no personal restitution of the results obtained was included.

Ethical considerations

Ethical approval was granted by the Ethical Review Board of the Policlinic of Bari, Italy, with the ID number 59-7939/14373.

All parents and their children who took part in this study had given their informed consent and the study was undertaken in compliance with the ethical principles in the Helsinki Declaration.

Data analysis

The data relating to children, as weight and height, BMI and percentile class were included in an Excel sheet. To them were added the values of the Linkert scale of the answers to the two questions addressed to the mothers of the children.

All values have been grouped by sample size and percentages. Spearman's correlation between subgroups of growth percentiles as a function of BMI and maternal perception was subsequently assessed. All values <0.05 were considered asstatistically significant.

Results

In total, 105 mothers and their children gave their consent to participate in this study. Children were between 9 and 10 years old. 61 (58.09%) children were female and 44 (41.90%) children were male.

For each child, body weight and height were assessed and the BMI value was calculated. Subsequently, the BMI values were compared to the percentile growth curves defined by the WHO. As a result, our sample consisted of: 6 (5.71%) female children in underweight conditions, 23 (21.90%) in normal weight, 16 (15.24%) at risk to overweight (AROW) and 16 (15.24%) overweight. While, 2 (1.90%) male children were underweight, 22 (20.95%) in normal weight, 8 (7.62%) at AROW and 12 (11.43%) in overweight condition (Table 1).

Table 1. Subdivision of the group of children by gender and growth percentiles with respect to BMI values.

	Percentile	Female n=61(50.09%)	Male n=44(41.90%)
Underweight	<5th	6(5.71%)	2(1.90%)
Normal weight	5th -85th	23(21.90%)	22(20.95%)
AROW	85th -95th	16(15.24%)	8(7.62%)
Overweight	>95th	16(15.24%)	12(11.43%)

Answers given by mothers regarding the level of perception of their child's body weight are explained in the Table 2. There is a strong correlation between maternal perception and the value of the growth percentiles of children (r=0.880). In fact, mothers are aware of their child's body weight. Furthermore, this correlation is statistically significant (p<0.001) (Table 3).

To the second question asked to the mothers, specifically if they were afraid or not about the fact that their child may become obese in the future, only 11 (10.48%) mothers out of 105 said they were very afraid about it. It is interesting to note in Table 4 that of

the 28 (26.67%) children overweight, only 7 (6.67%) mothers replied that they were afraid and 4 (3.81%) mothers replied that they were very afraid. The other mothers instead replied that they had no fear in this regard (Table 4).

Correlation between percentiles and the worry condition of mothers was statistically significant ($p<0.001$) but less strong than the correlation between the BMI percentiles and the first question ($r=0.483$), having found between mothers a low-medium fear of intensity in the future development of an overweight condition for one's child (Table 5).

Discussion

Our data show that mothers have a correct perception of their child's weight, but this does not imply any fear in the future, or in the potential development of an overweight condition for their child. Therefore, there is an underestimation by mothers to a possible problem of being overweight in the future of their child.

In this regard, our data are in disagreement with recent population and cohort studies in the USA and Australia which have administered underestimation

Table 2. Frequencies between children's growth percentiles and mothers' answers to the first question: "How would you describe your child's weight at the moment?"

Percentiles	Very underweight	Underweight	Normal weight	Overweight	Very overweight
Underweight	3(2.86%)	3(2.86%)	2(1.90%)	0(0%)	0(0%)
Normal weight	6(5.71%)	16(15.24%)	23(21.90%)	0(0%)	0(0%)
AROW	0(0%)	0(0%)	5(4.76%)	19(18.09%)	0(0%)
Overweight	0(0%)	0(0%)	0(0%)	11(10.48%)	17(16.19%)

Table 3. Spearman correlation between percentile values and answers to the first question.

Variables	Percentiles	Answers to question n. 1
Percentiles: Correlation coefficient p value	---------	r=0.880 p<0.001*
Answers: Correlation coefficient p value	r=0.880 p<0.001*	------

*Correlation is significant at the 0.01 level (2-tailed).

Table 4. Frequencies between children's growth percentiles and mothers' answers to the second question: "How worried are you about your child becoming overweight in the next future?"

Percentiles	Very concerned	A little concerned	Concerned	Fairly	Very concerned
Underweight	8(7.62%)	0(0%)	0(0%)	0(0%)	0(0%)
Normal weight	33(31.43%)	8(7.62%)	4(3.81%)	0(0%)	0(0%)
AROW	19(18.09%)	4(3.81%)	1(0.95%)	0(0%)	0(0%)
Overweight	7(6.67%)	4(3.81%)	6(5.71%)	7(6.67%)	4(3.81%)

Table 5. Spearman correlation between percentile values and answers to the second question.

Variables	Percentiles	Answers to question n. 2
Percentiles: Correlation coefficient p value	--------	r=0.880 p<0.001*
Answers: Correlation coefficient p value	r=0.483 p<0.001*	 ------

*Correlation is significant at the 0.01 level (2-tailed).

for weight and weight status among mothers whose children were overweight or obese (13-17). While the Eli et al. study (18) agreed with our findings, as it was highlighted that there were important gaps between clinical definitions and lay perceptions of childhood obesity. Parents and grandparents seemed to be aware of their preschoolers' growth chart percentiles and also these measures did not translate into recognition of children's overweight and obesity. For this matter participants spoke of obesity as a problem that may affect the children in the future but not at present.

Therefore, the literature exalts how the parental role negatively influences the eating behaviours of the children. For example, in the systematic review of Pocock et al. (19) all possible factors discussed in the literature on the perception of parents are considered regarding healthy behaviours for preventing overweight and obesity in young children. As regards family dynamics, it was highlighted that existed several barriers to behaviours for preventing child overweight and obesity. In fact parents in several studies recognized that their own behaviour potentially influenced their children's and expressed the belief that it was important for parents to act as promoting role for an healthy eating lifestyle. Although most parents believed that it was sufficient to only encourage their children to be active without promoting any approach to ensure the right lifestyle. Because parents did not recognize their child's weight as a potential risk for the health of their children, measures to perform these goals were always inconsistent and insufficient. In relation to parent involvement, there is extensive evidence that parent behaviour influences what children learn, how children respond to the external environment, and what children expect of themselves (20-23). Thus, it is concerning that many parents in this study expressed beliefs and described behaviours which were at odds with current thought on obesity prevention strategies (for example, that daily food treats are acceptable).

Also in the qualitative research of Pettigrew et al. (24) it was given a great importance to parents for guidance on how to eat well and support children in making appropriate decisions.

As notes by some academics who oppose more regulated advertising environment, parent influences on diet are strong and it is often the case that it is parent who are buying unhealthy foods for children (25). Clearly apparent was the need for consistency in both explicit and implicit healthy lifestyle messages children receive around food and activity choice. Whilst this makes it more difficult to draw the line between the healthy and unhealthy for the purpose of health promotion, it is still possible and important to provide clear and consistent messages to children about healthy food and activity choices.

Despite the high levels of child and parent knowledge about healthy foods and activities, this knowledge did not generally translate into reports of consistently healthy behaviours. It is crucial that the importance of a healthy lifestyle for all children be clearly understood by parents as many in this study, whilst acknowledging the enormity of the obesity problem for children in general, had not internalized the issue as relevant to their own child or family. The education setting is but one arena in which to develop practical strategies to prevent obesity in children (7, 10).

It is likely that concurrent and inclusive strategies will need to be established across a variety of settings to ensure consistent messages are relayed to children and their parents.

Conclusion

In the light of current literature, our data seem to confirm the same trend: parents, especially mothers, perceive their child's weight well but at the same time are not worried about weight and a future problem of overweight or obesity. In all the multiple literature on the subject, a key need highlighted by many works is food education for families promoted by schools.

Schools and communities therefore have a role in engaging parents in health education, behaviour change strategies and environmental modifications (26,27).

Educating parents and other cares about the ideal diet as defined by healthy authorities and providing them with the knowledge and skills they require to manage the effects of marketing activities and time deficits have the potential to make a positive difference to children's diet.

Parent recommendations regarding the timing and content of childhood obesity prevention strategies concur with epidemiological studies: parents suggested that prevention needed to begin before children were at school. With almost onefifth of children already overweight at age five (28), the usual age of school entry, school-based prevention strategies alone are too late to prevent overweight for this population of children. However, school-based strategies may be able to attenuate change over time. Existing evidence demonstrates that effective early childhood interventions can change the balance between risk and protective factors (29,30); therefore, earlier intervention for childhood overweight and obesity is likely to shift the odds in favour of a more desired outcome. However, the range of heterogeneous services and environmental settings in which children spend their time during early childhood does not provide a systematic opportunity to engage families and children in healthy eating, physical activity promotion and obesity prevention efforts, with the exception of broad-based community strategies. Thus, the potential utility of the school environment as a base for intervention strategies cannot be dismissed. Certainly the finding that children believe anything permitted at school is inherently healthy points to both the importance of schools as models of healthy environments and the unique opportunity provided to schools to expose children to healthy behaviour. This is particularly relevant for children who may not have exposure to such experiences in their family environment.

Conflicts of Interest: The authors declare no potential conflicts of interests.

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