

Body image: a survey of children in Caribbean Bonaire

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ABSTRACT

Background In Bonaire, the prevalence of overweight and obesity is twice as high compared with Northern Europe but similar to other Caribbean Islands and the USA. Having a realistic body image may be an important tool in the battle against childhood obesity. Previous studies have demonstrated associations between having a realistic body image and efforts to control weight. The aim of the study was to explore the body image of children in Bonaire.

Methods In a cross-sectional study from March to May 2015 in Bonaire, weight and height were measured in all children aged 10–14 years attending school. Body mass index (kg/m²) was classified according to the International Obesity Task Force. The children were asked about their body image using a validated questionnaire.

Results Body mass index was measured in 939 of 1029 (91.3%) children aged 10–14 years (51.5% boys) in Bonaire. Of all children, 9.7% was underweight, 57.6% was normal weight, 32.7% was overweight (including obesity) and 11.6% was obese. The question pertaining to body image was completed by 750 of 939 (79.9%) children. Having a realistic perception of body image varied per weight category from 65% in underweight girls to 13% in obese boys. The percentage of obese children who underestimate their weight is high (boys 87%, girls 77%).

Conclusions In many children in Caribbean Bonaire, perceived body image is not in agreement with actual weight status. This applies especially to obese children. Disagreement between perceived body image and actual weight status may prevent weight management in overweight children. Future research is needed to elucidate determinants of disagreement between body image and actual weight status.

BACKGROUND

Childhood overweight and obesity has rapidly increased worldwide in the last decades.¹ The prevalence of overweight and obesity in children in Bonaire, an island in the Caribbean, is approximately twice as high compared with Northern Europe but similar to other islands in the Caribbean and to the USA.² Overweight and obesity can lead to serious health problems, for example, type 2 diabetes, cardiovascular disease including hypertension, fatty liver disease, psychological problems and musculoskeletal disorders.^{3,4} In 2013, 35% of

What is known about the subject?

- ▶ The prevalence of overweight (including obesity 33%) and obesity (12%) in children in Caribbean Bonaire is high.
- ▶ Having a realistic body image may be an important tool in the battle against childhood obesity.

What this study adds?

- ▶ In the majority of children in Bonaire, perceived body image is not in agreement with actual weight status.
- ▶ Having a realistic perception of body image varied per weight category from 65% in underweight girls to 13% in obese boys.
- ▶ The percentage of obese children who underestimate their weight is high (boys 87%, girls 77%).

the adult population in Bonaire was overweight and 25% was obese.⁵ This is of great concern because the Afro-Caribbean population (approximately 85% of the population of Bonaire is Afro-Caribbean) is already at a higher risk for type 2 diabetes and hypertension compared with West African blacks and Caucasians.^{6,7}

Having a realistic body image may be an important tool to prevent childhood obesity. Previous studies in obese adolescents have demonstrated associations between having an accurate body image and efforts to control weight.^{8,9} Adolescents with BMI ≥85th percentile, self-perceived as obese, were more likely to try to lose weight than those that underestimated their weight.^{8,9} Knowledge of how children in the Caribbean perceive their weight status can help with devising a tailored obesity prevention programme. However, studies on body image in children and adolescents in the Caribbean are scarce and inconsistent. In a study in Jamaica, 122 adolescent girls generally had accurate perception of



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their size.¹⁰ In contrast, about 28% of 363 students aged 15–18 years in Trinidad and Tobago misclassified their body weight and perception of body weight influenced weight loss behaviours more than actual body weight.¹¹ In a study in 250 schoolchildren in Puerto Rico, most overweight/obese children did not perceive themselves as such. Although slightly more girls tended to perceive themselves as overweight, there was no significant difference between boys and girls.¹²

The aim of the study was to explore the body image of children in Bonaire, an island in the Caribbean, to compare their perceived weight with their actual weight and to evaluate if there are gender and age differences in having a correct body image.

METHODS

General

This study is part of a cross-sectional study of the prevalence of overweight and obesity in children in Bonaire. From March to May 2015, weight and height were measured in all children 10–14 years of age attending school (seven elementary and one high school). One small school (103 children) declined to participate in the study for unknown reasons. In addition, the children were asked to complete a questionnaire pertaining to lifestyle. The study was approved by the VU University Medical Ethical Committee. Parental permission for participation in the study was given by means of passive informed consent.

Measurements

Two trained assistants performed the anthropometric measurements at school. Body weight was measured to the nearest 0.1 kg using a digital scale (Seca 877, Hamburg, Germany) in children in light summer clothes (shorts and light shirt or light dress) without shoes. Correction for clothing was performed for children 4–6 years: 300 g; 7–9 years: 600 g; 10–11 years: 800 g and ≥ 12 years: 1000 g. Height was measured without shoes with a microtoise (Seca 206, Hamburg, Germany) to the nearest 0.1 cm. Body mass index (BMI) was calculated as weight (kg)/height (m²) and was classified according to the International Obesity Task Force.¹³

The children were asked to complete a lifestyle questionnaire during class. The questionnaire was available in Papiamentu and in Dutch. The question pertaining to body image read: ‘Do you think you are too fat or too thin?’ The children could choose one answer: (1) I am much too thin; (2) I am a bit too thin; (3) I am not too thin, not too fat; (4) I am a bit too fat or (5) I am much too fat. The question was derived from the Energy-project, a cross-European study to gain insight in energy balance-related behaviours in children.¹⁴ The question was tested good to excellent for test–retest reliability as well as construct validity (reliability 0.87 agreement 83%; validity 0.68 agreement 74%).¹⁵ A realistic body image for underweight children was defined as ‘much too thin or

a bit too thin’; for normal weight children: ‘not too thin, not too fat’; for overweight (excluding obese) children: ‘a bit too fat or much too fat’ and for obese children: ‘much too fat’.

Statistics

Analyses were performed with SPSS V.22.0 (IBM, New York, USA). The association of perceived and correct body weight in girls and boys was tested with the Pearson’s χ^2 test. A p value of <0.05 was considered significant. Logistic regression analysis using gender and age was performed for prediction of underestimation of body image.

RESULTS

Nine hundred and thirty-nine of 1029 (91.3%) children aged 10–14 years (51.5% boys) in Bonaire participated in the study. Anthropometric measurements were missing in 90 children (8.7%) because of the absence of school on the day of the measurements or because the parents objected to their participation in the study. Seven hundred and fifty of 939 (79.9%) children answered the question pertaining to body image. Of the children, 9.7% was underweight, 57.6% was normal weight, 32.7% was overweight (including obesity) and 11.6% was obese. **Figure 1** depicts body image of the children per weight category (underweight, normal weight, overweight and obesity) separately for boys and girls. There were no significant differences in realistic body image between boys and girls. **Table 1** shows body image (underestimation, realistic or overestimation of body image) per weight category (underweight, normal weight and overweight (including obesity)). Having a realistic body image varied per weight category: from 65% in underweight girls to 13% in obese boys. Of all overweight (including obese) children, 36.7% think they are normal weight or too thin. Gender (β 0.20; 95% CI 0.59 to 1.14) or age (β 0.74; 95% CI 0.84 to 1.03) predicted underestimation of body weight.

DISCUSSION

In Bonaire, half (56%) of all children aged 10–14 years had a realistic body image. This is in concert with a study from Puerto Rico, likewise an island in the Caribbean, where half of 230 children (mean age 9.5 years) correctly identified their weight.¹² However, this is lower than in the USA (The National Health and Nutrition Examination Survey 2011–2012) where 67% of children aged 8–11 years and 73% of adolescents aged 12–15 years have a realistic body image.¹⁶ Having a realistic body image in our study as well as in the USA was similar for boys and girls but varied by weight status.¹⁶

Among overweight (including obese) children aged 10–14 years in Bonaire, more than one-third (37%) was not aware he/she is overweight. This resembles overweight (including obese) children aged 10–12 years in

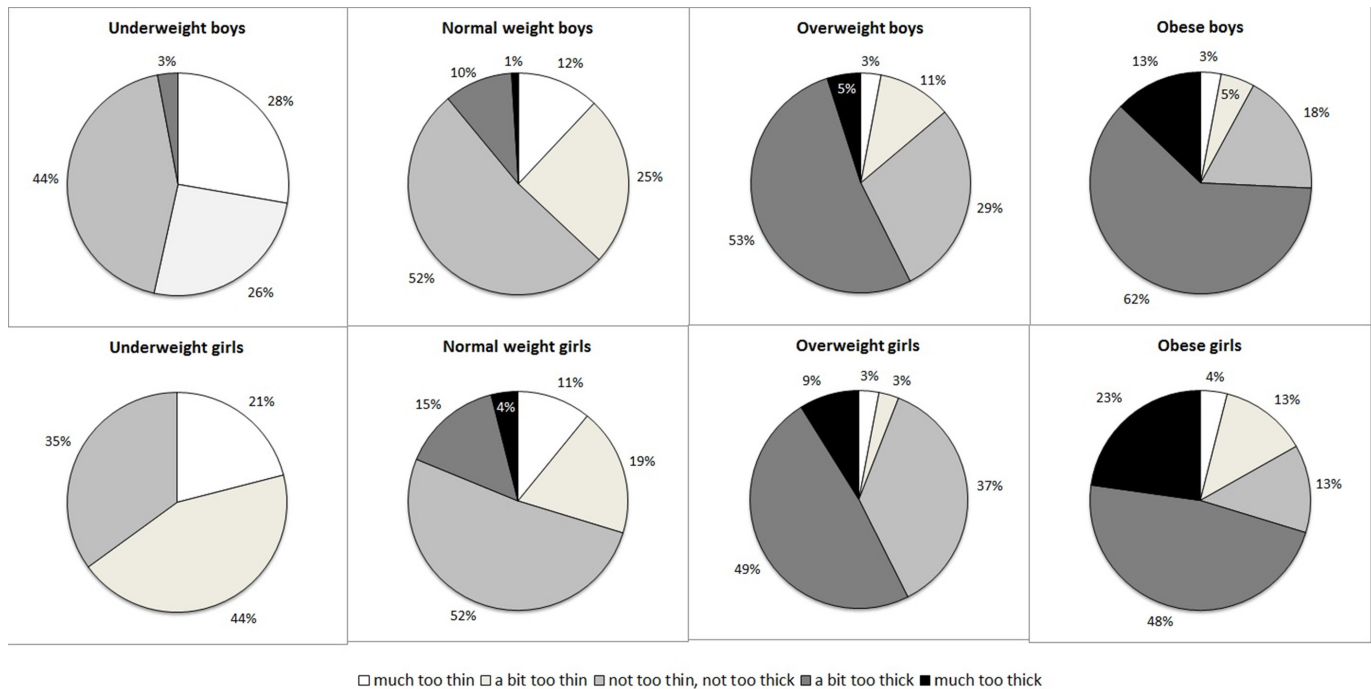


Figure 1 Body image in underweight, normal weight, overweight and obese and boys and girls aged 10–14 years in Bonaire (n=750).

Europe of whom 43% think they are normal weight or too thin.¹⁷ Likewise, in the Health Behaviour in School-aged Children survey (229 614 children) conducted in 24 countries across Europe and North America in 2010, 19% overweight (including obese) boys and 36% overweight (including obese) girls underestimated their weight.¹⁸ However, in Puerto Rico, more overweight (including obese) children (59%) misperceived their weight status.¹⁷ In the USA, these percentages were even higher: 76% of overweight (excluding obesity) youth and 42% of obese youth did not have a reality-based body image.¹⁶ Compared with the USA, in Bonaire, the percentage of obese children who underestimate their weight (children who classified their weight as underweight, normal weight or a little too fat) is much higher (boys 87%, girls 77%).

There may be different reasons for the disagreement between children's actual weight status and their perceived body image. The increasing adiposity levels

worldwide have normalised the image of overweight and obesity among the population, leading to reduced recognition of excess weight.¹⁹ Additionally, children may adopt the point of view of their parents. In Puerto Rico, 62% of parents correctly classified their children's weight status, which is an only slightly better achievement than the 51% of the children that correctly classified their weight status.¹² Another reason for disagreement between perceived body image and weight status may be of a cultural origin. Overweight and obesity in children is often not seen as a negative trait, on the contrary, it is frequently considered a sign of beauty and prosperity.²⁰ Adolescents in Trinidad, like Bonaire an island in the Caribbean, associated obesity with wealth, and also—but to a lesser extent—with happiness.²¹

However, there may be a thin line between having a correct body image and the negative psychological consequences of childhood obesity, such as low

Table 1 Percentage of children that underestimate, have a realistic body image or overestimate their body weight per weight category in 750 (aged 10–14 years) children in Bonaire*

	Underestimation of body weight*, %	Realistic body image†, %	Overestimation of body weight, %
Underweight	0	58.9	41.1
Normal weight	32.9	52.1	15.0
Overweight‡	36.7	63.3	0
Total	30.9	56.4	12.7

*Weight category was classified according to the International Obesity Task Force.¹³

†A realistic body image for underweight children was defined as 'much too thin or a bit too thin'; for normal weight children: 'not too thin, not too fat'; for overweight (including obese) children: 'a bit too fat or much too fat' or 'much too fat'. There was no significant difference in body image per weight category between boys and girls.

‡Overweight including obesity.

self-esteem, depression and body dissatisfaction.^{20–22} Body dissatisfaction has been linked to a number of unhealthy eating disorder behaviours such as skipping meals, fasting, self-induced vomiting and use of diet pills or laxatives.²³ In Australia, overweight/obese adolescents who perceived themselves as being overweight had lower quality of life than those with 'about right' perceptions. The authors concluded that practitioners need to exercise caution when educating adolescents about their weight status, as such reality checks may negatively impact quality of life.²⁴

Strengths and limitations

The strengths of this study are that nearly all (91.3%) children aged 10–14 years in Bonaire participated in the study and that the anthropometric measurements were performed by the same two trained assistants.

However, a limitation of the study is that BMI is not the golden standard for fat percentage. Children with high muscle mass will be erroneously classified as overweight or obese, overestimating their BMI. A further limitation is that because there are no validated questionnaires examining body image in Caribbean children, we used a questionnaire that was validated for European children. Although it would be interesting, the study was not set up to get information about the socioeconomic status because the children filled out the questionnaire without involvement of the parents. Furthermore, children may have given socially acceptable answers; this may especially apply to overweight and obese children. When classifying body image, we hypothesise that socially acceptable answers can lead to underestimation of reality-based body image in overweight children.

CONCLUSIONS

In many children in Bonaire, perceived body image is not in agreement with actual weight status. This applies especially to obese children, of whom only 13% of the boys and 23% of the girls perceived themselves as being much too heavy. Disagreement between perceived body image and actual weight status may prevent weight management in overweight children. Future research is needed to elucidate determinants of disagreement between body image and actual weight status.

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Competing interests None declared.

Ethics approval The study was approved by the VU University Medical Ethical Committee.

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Data sharing statement All data are published and available upon request.

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