

Parents' perception of children's obesity, in Al-Qassim, Saudi Arabia

Abdulrahman A. Al-Mohaimeed

Department of Family and Community Medicine, College of Medicine, Qassim University, Kingdom of Saudi Arabia

Address for correspondence: Dr. Abdulrahman A. Al-Mohaimeed, Department of Family and Community Medicine, College of Medicine, Qassim University, Room 3062, Buraidah, Kingdom of Saudi Arabia. E-mail: armoh@qumed.edu.sa

ABSTRACT

Background and Objectives: Although the prevalence of childhood obesity has increased significantly in Saudi Arabia, parents are unable to appreciate obesity in their child. The objective of the study was to identify the percentage of parents who misclassify the status of child's weight, and determine whether there is a difference between those parents whose children are overweight and obese and those with children of normal weight. **Materials and Methods:** This cross-sectional study included 601 children aged 6–10 years. The children were recruited from the primary schools located in Al-Qassim, Saudi Arabia. The body mass index of the children was assessed in the school, and their parents responded to a self-administered questionnaire which contained questions on parental perception of the children's weight/obesity status. Data were entered and analyzed using SPSS. **Results:** Parents with overweight/obese children had significantly more misclassification than those with normal weight children. Ninety percent of parents of the 81 overweight children misclassified and reported that their child had normal weight, while 65% of parents of the 61 obese children, misclassified the child's weight status. **Conclusions:** The level of misclassification of children's weight status by parents is high. Saudi parents with overweight and obese children do not recognize their child's weight status. Parents' awareness of childhood obesity and its negative health impact needs to be improved.

Key words: Children, obesity, parental perception, Saudi Arabia

INTRODUCTION

Previous decades have seen a significant rise in the global prevalence of childhood obesity.^[1] In Saudi Arabia, the prevalence of overweight and obesity in school-aged children is estimated at 23% and 9%, respectively.^[2] The hypothesis is that deteriorating nutritional intake and declining levels of physical activity are the underlying causes of childhood obesity. The proposal in the Kingdom is that a comprehensive intervention to be undertaken to address childhood obesity should include educational programs for parents and children in schools. It is believed that with the cooperation of the children and parents this rise in the prevalence of obesity could be slowed or even stabilized.^[3,4]

The initial step to address childhood obesity in Saudi Arabia is the recognition of the problem. Globally, it has been shown that in certain ethnic groups, <50% of parents recognize their child's overweight status.^[5-10] It is likely that the Gulf region is one area where correct identification of childhood obesity by parents is quite poor. Studies in Saudi Arabia, Kuwait, and the United Arab Emirates have all shown that there were significant differences between parents' perceptions of weight compared to measured weight.^[11-13] The majority of parents underestimated their child's weight. The percentage of misclassification by parents ranged from 20% to 35%. The inaccurate parental perception was associated with being female, older age, less education, and children with higher body mass index

Access this article online	
Quick Response Code:	Website: www.jfcmonline.com
	DOI: 10.4103/2230-8229.189134

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How to cite this article: Al-Mohaimeed AA. Parents' perception of children's obesity, in Al-Qassim, Saudi Arabia. J Fam Community Med 2016;23:179-83.

(BMI).^[14,15] Misclassification was higher in parents of overweight/obese children compared to those parents with normal weight children.^[12,15]

Parental perception of a child's weight status is critical to addressing the health problem of childhood obesity, and this is a relatively new area of research in Saudi Arabia. Therefore, the objectives of this study were: (1) To determine the percentage of parents who misclassified their overweight/obese children as having normal weight, and (2) to determine whether the misclassification is higher among parents with overweight/obese children than in parents of children with normal weight.

MATERIALS AND METHODS

Overview

This study adopted a multi-stage random sampling procedure to identify its sample. The schools from two cities (with the largest populations) in the Al-Qassim province, Buraidah, and Unaizah, were selected. An updated list of all public primary schools was used in the sampling frame: 34 schools were randomly selected from a total of 340 schools (29 for Buraidah and 5 for Unaizah according to the proportion of the population). Thereafter, a class list was created for each of the targeted grades (from Grades I-IV) in the selected schools. Ten classes from each grade were randomly selected (40 classes). All students in the selected classes were invited to participate (≈ 1000 , with an average 25 students per class). Those who were present at the time of data collection and voluntarily consented were recruited.

The students were given a form and a questionnaire to be taken to their parents at home. The form had a brief description of the study, an invitation for participation, informed consent, and a request to complete the accompanying questionnaire, which included questions about their sociodemographic characteristics and dietary, physical, and disease-related information of their children. The students were asked to return the completed questionnaires to the school social workers. After giving consent, the students were assessed for anthropometric indices.

Sample

The inclusion criteria of children in this study were: Saudi nationality and aged between 6 and 10 years. The exclusion criteria were: Being disabled (physically or mentally), a diagnosis of chronic disease, psychiatric illness, or immune-compromised disorder. A total of 874 children (male: 618; female: 256) provided anthropometric measurements, and 601 of them returned the questionnaire completed by their parents. Although the number of

boys and girls in Saudi primary schools are comparable, the low involvement of girls in this study was because of the low response from their parents. Approximately, 30% of the parents of the female students did not return the questionnaire.

Measurement

Height and weight were measured following the standard protocol (e.g., bare feet and light clothes), using a digital scale (ultra-precision digital personal scale, micHealth DB-2201, Tokyo, Japan) and the scales were recalibrated after each measurement. Body mass index (BMI) was calculated as weight (in kg) divided by height (in square meters). The questionnaire included information about sociodemographics: (a) Parent's age, education, occupation, residence, family size, and socioeconomic status, (b) children's age and gender and (c) two questions to assess parent's perception of the child's weight (1. "Do you think that your child is obese?" and 2. "Is the child's weight normal?"). The questionnaire was piloted on a small group of students before it was administered in the study. The study protocol was approved by the Ethical Review Committee at Qassim University College of Medicine.

Analysis

Prevalence of overweight and obesity were calculated according to body mass index cut-off values. We examined the association between overweight and obesity with selected sociodemographic characteristics. Using Chi-square tests, we tested whether misclassification of the status of the child's weight by parents differed significantly between normal, overweight, and obese children. Analyses were performed in SPSS (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY:).

RESULTS

Of the 874 children invited to participate, 601 (69%) returned the questionnaires which were filled by either of their parents. Of the sample, 69% were boys and 31% were girls; their mean age was 8.4 ± 1.3 years. On average, girls had a significantly higher body mass index (BMI) than boys (18.1 vs. 16.0 kg/m²). Accordingly, the prevalence of overweight and obesity in girls (17.9% and 14.1%) was higher than in boys (10.3% and 7.2%). Combined data for overweight/obese prevalence were significantly higher in girls than in boys (32.1% vs. 17.5%, $p < 0.0001$).

Table 1 shows an unclear relationship between parental education and economic status with the child's overweight/obese status. For example, parents with lower education had a slightly higher percentage of obese children, but parents with secondary and higher education had a higher percentage of overweight children. A similar

Table 1: Sociodemographic characteristics of school children by their measured weight status, Al Qassim, Saudi Arabia (n=601)

	Child weight status		
	Normal (n=469) N (%)	Overweight (n=76) N (%)	Obese (n=56) N (%)
Father's age (Mean±SD)	44.1±8.54	43.8±8.53	44.6±8.25
Mother's age (Mean±SD)	36.2±6.33	36.0±6.35	37.6±7.78
Child's age (Mean±SD)	8.4±1.34	8.7±1.19	8.6±1.35
Child's gender			
Male	82.5 (344)	10.3 (43)	7.2 (30)
Female	67.9 (125)	17.9 (33)	14.1 (26)
Father's education			
Less than secondary	81.3 (226)	9.0 (25)	9.7 (27)
Secondary	75.4 (89)	15.3 (18)	9.3 (11)
Higher than secondary	75.1 (154)	16.1 (33)	8.8 (18)
Mother's education			
Less than secondary	80.6 (266)	9.1 (30)	10.3 (34)
Secondary	71.9 (82)	20.2 (23)	7.9 (9)
Higher than secondary	77.1 (121)	14.6 (23)	8.3 (13)
Socioeconomic level			
Low	82.3 (51)	8.1 (5)	9.7 (6)
Moderate	79.3 (338)	11.3 (48)	9.4 (40)
High	70.8 (80)	20.4 (23)	8.8 (10)
Home type			
Rental apartment	82.9 (68)	9.8 (8)	7.3 (6)
Rental house	70.3 (83)	12.7 (15)	16.9 (20)
Home owner	79.3 (318)	13.2 (53)	7.5 (30)
Family size			
Less than five	85.2 (46)	9.3 (5)	5.6 (3)
Five to eight	76.4 (281)	16.0 (59)	7.6 (28)
More than eight	80.5 (120)	7.4 (11)	12.1 (18)
unknown	73.3 (22)	3.3 (1)	23.3 (7)
Family obesity			
No	81.6 (425)	11.3 (59)	7.1 (37)
Yes	55.0 (44)	21.3 (17)	23.8 (19)
Children's activity			
Lazy	76.0 (19)	12.0 (3)	12.0 (3)
Acceptable	67.5 (52)	14.3 (11)	18.2 (14)
Moderate	78.7 (177)	12.9 (29)	8.4 (19)
Active	80.7 (221)	12.0 (33)	7.3 (20)
Meal #/day			
Two	83.8 (67)	8.8 (7)	7.5 (6)
Three	75.1 (284)	14.8 (56)	10.1 (38)
Four	83.2 (99)	9.2 (11)	7.6 (9)
Five	79.2 (19)	8.3 (2)	12.5 (3)
Fast food per week			
One	78.6 (169)	14.4 (31)	7.0 (15)
Two	73.7 (84)	13.2 (15)	13.2 (15)
Three	55.2 (16)	24.1 (7)	20.7 (6)
More than three	82.4 (28)	5.9 (2)	11.8 (4)

pattern appeared for socioeconomic status: Parents of low socioeconomic status had more obese children (9.7%), and those of high socioeconomic status had more overweight children (20.4%). Family size and family history of obesity

were correlated with childhood weight status. Families with less than five members had a lower percentage of overweight and obese (9.3% and 5.6%) children than larger families. Families that had other obese family members were more likely to have overweight (21.3%) and obese (23.8%) children compared to families with normal weight. Parental reporting on the child's dietary habits and activity were not correlated with the child's weight status, neither were the dietary habits or the child's activities measured directly.

Parents reported on whether their child had normal weight. Of the 76 overweight children, 90% of the parents misclassified and reported that their child had normal weight. Of the 56 obese children, 64.3% of parents misclassified the child's weight status. Misclassification – identifying an overweight or obese child as normal weight – was significantly higher among parents with overweight and obese children than parents with normal children ($p = 0.001$) [Figure 1].

DISCUSSION

The main finding of the study was that a high percentage of parents misclassified the status of their child's weight. These findings suggest a much higher prevalence of parent misclassification compared to earlier studies.^[6,11,16-22] Since the methods of this study were similar to earlier studies, it is possible that this phenomenon may be regional. It has been shown that overall adult and child obesity is higher in the Qassim region than in other regions of Saudi Arabia.^[23] However, our study findings are similar to earlier studies, which showed that most parents underestimated the child's weight and infrequently identified normal weight children as overweight.^[12]

Further, we found that a significantly higher proportion of parents with overweight and obese children misclassified their child's weight status than parents of children with normal weight. This finding indicates that parents are unaware of the signs and/or cut-off values for childhood obesity. It is plausible that certain cultural perceptions exacerbate the misperception. Earlier studies in other regions have suggested that normal weight children are perceived as too thin or even malnourished, and a more plump physical appearance is considered healthy.^[24] In addition, there could be some gender differences related to this misperception, but these hypotheses have not yet been adequately explored, and we had no evidence of any difference in our study.^[6,13]

This study has identified a critical component for addressing the public health problem of childhood obesity in Saudi Arabia. Parents' level of awareness and understanding of childhood obesity with its negative health impact must

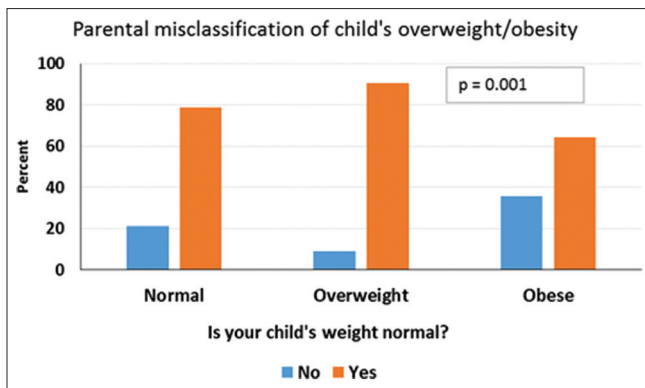


Figure 1: Parental perception of weight compared with measured weight status among school-children from Al-Qassim, Saudi Arabia

be improved. Parents have a great deal of influence on the dietary habits of their children and opportunities for activity. Further, they are role models for their children with respect to health and proper health behaviors.^[25] Our study showed that families that had other obese family members were more likely to have overweight and obese children compared to families with normal weight children. These findings corroborate previous research that showed the status of parental weight as a strong predictor of the status of child's weight and the child's weight gain.^[26,27]

As stated by others, successful management of childhood obesity requires an understanding of the history, religion, culture and family and social networks of the people concerned. The findings indicate the importance of childhood obesity as a health issue in Saudi Arabia, and demand for more intervention-based studies, which could generate evidence-based programs to reduce the costs and burden of childhood obesity and its complications.^[28]

This study has some methodological limitations: (1) Physical activity levels were not measured objectively, and we had no information on the exact dietary intake or portion sizes. The use of accelerometer or food diaries would have provided more valid data. However, questionnaires are common, low-cost methods, particularly in large epidemiological studies. (2) Data on parental height and weight were not taken and therefore we could not examine the associations between parent obesity and child obesity. (3) In our sample, the number of girls enrolled was lower than boys; hence, we could not test gender differences in obesity or parental misclassification with adequate power. Parents of female students (30% nonresponders) had a low response rate.

CONCLUSIONS

There is a high level of misclassification of children's weight status by parents. Saudi parents with overweight and obese children do not appreciate the status of their child's

weight. Parents' awareness of childhood obesity and its negative health impact needs to be improved. Widespread public health campaigns and programs are needed either through the schools or via the Ministry of Health to address childhood obesity in Saudi Arabia.

Acknowledgments

The author is extremely grateful to all the people who took part in this study. Thanks also go to Dr. Juliann Saquib for the editorial assistance in the preparation of the manuscript.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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