

ORIGINAL ARTICLE

# Perception of parents about their children's obesity complication in Jeddah, Saudi Arabia

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## ABSTRACT

**Background:** Helping parents to identify their children's weight status and recognize the health risk related to overweight and obesity could be the first step in promoting a healthy lifestyle and healthy body weight among their children. The present study was aimed to assess parents' perceptions of their children's weight status and compare this perception with the actual weight status of those children.

**Methodology:** The study was conducted at King Abdulaziz University Hospital, Jeddah, Saudi Arabia. The parents were contacted by phone to answer a questionnaire, which included questions about their sociodemographic characteristics and dietary, physical, and disease-related complication of childhood obesity.

**Results:** The study included parents of 106 Saudi children aged 2-14 years old. A significantly higher percentage (73.3%) of overweight children was underestimated by their parents as had normal weight ( $p < 0.001$ ). On the other hand, 50.0% of underweight children were overestimated by parents as normal weight. Misclassification was highest among parents of overweight children (73.3%) and underweight (50%) children. Furthermore, the absence of knowledge about obesity complications was significantly associated with lower levels of parent's education, low family income, and increased eating of fast foods.

**Conclusion:** A significant proportion of parents underestimated their child's weight status. The proportion of misperception was higher among parents of overweight children. Furthermore, parents' awareness of the negative impact of childhood obesity on health needs to be improved. These results are valuable for developing educational programs and strategies involving parents for proper control of childhood obesity. It is essential to target these incorrect parental perceptions.

**Keywords:** Childhood obesity, parents, perceptions, knowledge, Saudi Arabia.

## Introduction

Globally, obesity is a significant problem with both medical and social drawbacks. It has been reported to influence global welfare with high morbidity and mortality rates. Nowadays, out of 2 billion overweight adults, 650 million are considered obese [1]. Obesity was once recognized as an adult problem. However, it is now regarded as one of the significant pediatric health concerns, particularly in developing countries [2,3]. Several research studies have reported that Saudi children of different age groups show a high incidence of overweight and obesity. In most of the cases, an obese child will continue being obese during adolescence and adulthood, showing all the common obesity-related complications [4,5]. The

problem of overweight and obesity in Saudi Arabia could be attributed to the economic growth and prosperity of decreased physical activity and an unhealthy lifestyle.

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**Received:** 03 August 2020 | **Accepted:** 01 October 2020

Furthermore, morbid dietary habits, in the form of increased fried consumption, high-calorie fast restaurant foods, and reduced intake of vegetables and fruits, are added factors. Furthermore, genetic factors may play a role in the development of obesity as evidenced by studies, showing that obese parents are more likely to raise obese children [6-9](Reilly, Methven et al. 2003, Reilly, Armstrong et al. 2005, Binnsheed 2013, Al-Enazy, Al Dahi et al. 2014). Obesity is a significant risk factor for several health disorders, such as hypertension, type 2 diabetes mellitus, ischemic heart diseases, stroke, gallbladder diseases, and dyslipidemia(Nguyen, Magno et al. 2008). However, these adverse health effects are reversible if the excess weight is lost and the body mass index returns within the normal range, pointing to the importance of weight reduction therapies for obese individuals [10]. Several studies confirmed that many parents are not concerned about their children's weight status, and they do not recognize that their children are overweight [11,12]. A high prevalence of the problem of overweight and obesity among Saudi children has been observed. Helping parents to identify their children's weight status and recognize the health risk related to overweight and obesity could be the first step in promoting a healthy lifestyle and healthy body weight among their children. Hence, this study was conducted to assess parents' perceptions of their children's weight status and compare this perception with those children's actual weight status.

## Subjects and Methods

The study conserved participants' privacy. Each subject had a unique identifier code. Participants were informed about the study objectives and methodology. Subjects who agreed to complete the questionnaire imply that they decided to participate in the study. The study obtained ethical approval from the College of Medicine's Research Ethics Committee at King Abdulaziz University, Jeddah, Saudi Arabia. The study was conducted at King Abdulaziz University Hospital (KAUH) Jeddah, Saudi Arabia. Data collection was carried out during November-December 2019.

A cross-sectional study was carried out. The parents were contacted by phone to answer a questionnaire. The questionnaire included questions about their sociodemographic characteristics and dietary, physical, and disease-related complication of childhood obesity. Contact information was taken from the database of the KAUH phoenix system. The target population included KAUH Saudi patients aged 2–14 years old and their parents living in Jeddah city, Saudi Arabia. Non-Saudi children, participants with incomplete data, and children who have a mental disability were excluded from the study. The questionnaire included information about (a) the parent's age, education, occupation, residence, family size, and socioeconomic status; (b) the children's age and gender; (c) questions to assess parents' perception of the child's weight; and (d) questions to assess parents'

knowledge regarding child obesity complications. Statistical analysis and presentation of data were conducted using the Statistical Package for the Social Sciences version 22 computer program. Categorical data were presented as numbers and percentages, and the Fisher's exact test was applied to investigate the association between categorical variables. For continuous data, they were tested for normality by the Shapiro-Wilk test. They were non-normally distributed and were expressed as the median and interquartile range (25th–75th percentiles), and the Kruskal-Wallis test was used for comparison between the studied groups. The level of statistical significance was considered at  $p < 0.05$ .

## Results

The study included parents of 106 Saudi children aged 2-14 years old. Male children outnumbered females (60.4% vs. 39.6%, respectively). More than half of the fathers (55.7%) and mothers (53.8%) had a university level of education. Their family income was diverse from less than 15,000 (26.4%) to more than 30,000 (34.0%). Small family size ( $\leq 4$  members) was the most frequent, followed by middle size (5-8 members) (47.2% and 38.7%, respectively). A family history of obesity was recorded in only 38.7%, and the majority of children were active (82.1%). Parents recorded that nearly half of the children eat three meals per day and fast food once per week (47.2% and 51.9%, respectively). Furthermore, most children had an average body mass index, whereas 15 (14.2%) were overweight, and 8 (7.5%) were underweight. Furthermore, there was a statistically significant association between each of the child's gender, parent's education, family income and size, history of an obese member in the family, number of meals per day besides the number of fast foods per week, and the weight status of the children ( $p < 0.05$ ) as shown in Table 1. Perceptions of parents about their children's weight are shown in Table 2. Their parents underestimated significantly higher percentage (73.3%) of overweight children as had average weight ( $p < 0.001$ ). On the other hand, 50.0% of underweight children were overestimated by parents as normal weight. It was found that misclassification was highest among parents of overweight children (73.3%) and underweight (50%) children. Table 3 shows that only 32 (30.2%) were worried about their children becoming overweight, whereas the majority (54.7%) did not show any concern. The majority (89.6%) knew the complications of obesity on their children. Some of them (40.0%) knew all obesity complications, such as diabetes mellitus, hypertension, high cholesterol, psychological, social, and breathing problems. Furthermore, the most commonly reported complications were both diabetes and hypertension (33.7%). The association of sociodemographic and dietary characteristics and the parents' knowledge about complications of obesity are shown in Table 4. Significantly higher percentage (62.1%) of parents who thought that obesity causes complications was educated at a university level. On the other hand, the absence of

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**Table 1.** Association of sociodemographic and dietary characteristics and the children's weight.

		Child's body mass index						Fisher's exact test	
		Normal 83 (78.3%)		Overweight 15 (14.2%)		Underweight 8 (7.5%)		Total 106 (100%)	p-value
		n	%	n	%	n	%	n (%)	
Child's age median (IQR)		6.0(4.0-9.0)		6.0 (5.0-10.0)		5.0 (4.0-6.0)		6.0 (4.0-9.0)	0.178
Child's gender	Female	35	83.3%	7	16.7%	0	0.0%	42 (39.6%)	0.044*
	Male	48	75.0%	8	12.5%	8	12.5%	64 (60.4%)	
Father's education	Less than secondary	4	33.3%	8	66.7%	0	0.0%	12 (11.3%)	<0.001*
	Secondary	35	100.0%	0	0.0%	0	0.0%	35 (33.0%)	
	University	44	74.6%	7	11.9%	8	13.6%	59 (55.7%)	
Mother's education	Less than secondary	19	70.4%	8	29.6%	0	0.0%	27 (25.5%)	0.002*
	Secondary	22	100.0%	0	0.0%	0	0.0%	22 (20.8%)	
	University	42	73.7%	7	12.3%	8	14.0%	57 (53.8%)	
Family income (SAR/month)	<15,000	20	71.4%	8	28.6%	0	0.0%	28 (26.4%)	0.002*
	>30,000	32	88.9%	0	0.0%	4	11.1%	36 (34.0%)	
	15,000-30,000	31	73.8%	7	16.7%	4	9.5%	42 (39.6%)	
Family size	Small (≤4 members)	31	62.0%	11	22.0%	8	16.0%	50 (47.2%)	0.001*
	Large (≥9 members)	15	100.0%	0	0.0%	0	0.0%	15 (14.2%)	
	Middle (5-8 members)	37	90.2%	4	9.8%	0	0.0%	41 (38.7%)	
Family obesity	No	50	76.9%	7	10.8%	8	12.3%	65 (61.3%)	0.028*
	Yes	33	80.5%	8	19.5%	0	0.0%	41 (38.7%)	
Is the child active?	No	15	78.9%	0	0.0%	4	21.1%	19 (17.9%)	0.015*
	Yes	68	78.2%	15	17.2%	4	4.6%	87 (82.1%)	
Fast food per week	More than three times	23	100.0%	0	0.0%	0	0.0%	23 (21.7%)	<0.001*
	Three times	0	0.0%	0	0.0%	4	100.0%	4 (3.8%)	
	Once	40	72.7%	11	20.0%	4	7.3%	55 (51.9%)	
	Twice	20	83.3%	4	16.7%	0	0.0%	24 (22.6%)	
Meals eaten per day	Three	39	78.0%	11	22.0%	0	0.0%	50 (47.2%)	<0.001*
	Four	19	100.0%	0	0.0%	0	0.0%	19(17.9%)	
	Five	15	78.9%	4	21.1%	0	0.0%	19(17.9%)	
	One	10	71.4%	0	0.0%	4	28.6%	14 (13.2%)	
	Two	0	0.0%	0	0.0%	4	100.0%	4 (3.8%)	

\*Significant at  $p < 0.05$ .

**Table 2.** The relation between parent's perceptions of their children's weight and the actual weight status of them.

		Child's body mass index					Fisher's exact test
		Normal	Overweight	Underweight	Total	p value	
Parent's perception of their children weight	Normal	n	53	11	4	68	<0.001*
		%	63.9%	73.3%	50.0%	64.2%	
	Overweight	n	0	4	0	4	
		%	0.0%	26.7%	0.0%	3.8%	
	Underweight	n	30	0	4	34	
		%	36.1%	0.0%	50.0%	32.1%	

\*Significant at  $p < 0.05$ .

Parents perception about children's obesity

**Table 3.** Knowledge of the parents about complications of obesity.

		<i>n</i>	%
Do you worry about your child becoming overweight?	May be	16	15.1%
	No	58	54.7%
	Yes	32	30.2%
Do you think that child obesity causes complications?	No	11	10.4%
	Yes	95	89.6%
Which of these complications are you familiar with?	Hypertension	4	4.2%
	Diabetes mellitus	7	7.4%
	Hypertension and diabetes mellitus	32	33.7%
	Hypertension, diabetes mellitus, and bullying	4	4.2%
	Diabetes and bullying	7	7.4%
	Breathing problems as bronchial asthma and sleep apnea	3	3.2%
	All the above complications	38	40.0%

**Table 4.** Association of sociodemographic and dietary characteristics and the parents' knowledge about complications of obesity.

		Do you think that child obesity causes complications?				Fisher's Exact test
		Yes		No		<i>p</i> -value
		<i>n</i>	%	<i>n</i>	%	
Father's education	Less than secondary	8	8.4%	4	36.4%	<0.001*
	Secondary	28	29.5%	7	63.6%	
	University	59	62.1%	0	0.0%	
Mother's education	Less than secondary	23	24.2%	4	36.4%	<0.001*
	Secondary	15	15.8%	7	63.6%	
	University	57	60.0%	0	0.0%	
Family income (SAR/month)	<15.000	20	21.1%	8	72.7%	<0.001*
	>30.000	36	37.9%	0	0.0%	
	15,000-30,000	39	41.1%	3	27.3%	
Family size	Small (≤4 members)	46	48.4%	4	36.4%	0.138
	Large (≥9 members)	15	15.8%	0	0.0%	
	Middle (5-8 members)	34	35.8%	7	63.6%	
Family obesity	No	58	61.1%	7	63.6%	0.571
	Yes	37	38.9%	4	36.4%	
Is the child active?	No	19	20.0%	0	0.0%	0.101
	Yes	76	80.0%	11	100.0%	
Fast food per week	More than three times	23	24.2%	0	0.0%	0.001*
	Three times	4	4.2%	0	0.0%	
	Once	52	54.7%	3	27.3%	
	Twice	16	16.8%	8	72.7%	
Meals eaten per day	Three	46	48.4%	4	36.4%	0.116
	Four	19	20.0%	0	0.0%	
	Five	15	15.8%	4	36.4%	
	One	11	11.6%	3	27.3%	
	Two	4	4.2%	0	0.0%	

\*Significant at  $p < 0.05$ .

knowledge about obesity complications was significantly associated with a lower level of parent's education. Moreover, knowledge about obesity complications was significantly associated with family income and the number of fast foods per week ( $p < 0.05$ ). The absence of knowledge was significantly associated with low income and eating fast foods twice per week (72.7% each).

## Discussion

The current study explored a significant discrepancy between parents' perceptions of their children's weight and their actual weight status. Their parents underestimated the majority (73.3%) of overweight children as had average weight. Similarly, 50.0% of underweight children were overestimated by parents as normal weight. The observed misclassification was highest among parents of overweight and underweight children. The detected underestimation of the child's parents' overweight in the current study is inconsistent with previous results [13-15]. A much higher prevalence (90.0%) of underestimating overweight children by their parents was reported in the Al-Qassim region, Kingdom of Saudi Arabia (KSA) [16]. However, a similar study in the United Arab Emirates revealed a lower rate (27.4%) of parental underestimation of overweight/obese children [17]. The finding is also in accordance with a previous systematic review that investigated the difference between parental perception and actual weight status of their children. It revealed that 62.4% of overweight children were incorrectly perceived as having normal weight [18].

Moreover, a meta-analysis assessed that worldwide parental perceptions of children's weight revealed that half of the parents underestimated their overweight/obese children [19]. Furthermore, factors associated with parental misrecognition of their children's overweight, including their healthy eating habits and physical activity, were illustrated by a study in Northern Finland [20]. However, an accurate estimation of the obesity status of children was reported by most of the parents (87.5%) in South Korea [21]. In the current study, a significantly higher proportion of parents with overweight misclassified their child's weight status than parents of children with normal weight or underweight. This finding reflects the unawareness of parents of the signs and/or cutoff values for childhood obesity. Thus, only 30.2% of the surveyed parents were worried about their children becoming overweight, whereas most (54.7%) did not show any concern. This parental misperception is probably augmented by certain cultural beliefs that a plump physical appearance is considered healthy [16]. Failure of parents to identify the weight status of overweight children is of concern. This alarmingly recently reported a high prevalence of childhood obesity among Saudi children [22]. In fact, parental recognition of weight problems is a crucial factor in preventing childhood obesity. Correct parents' perceptions about their children's weight increase their alertness and

response to the appropriate health messages directed to obesity and its complications [23].

Obesity in children is a significant public health concern due to the increasing number of cases and the morbid consequence [24]. Thus, this study also investigated the knowledge of parents about complications of obesity. The majority (89.6%) thought that obesity causes complications for their children. Some of them (40.0%) knew all obesity complications, such as diabetes mellitus, hypertension, high cholesterol, psychological, social, and breathing problems. Further, the most commonly reported complications were both diabetes and hypertension (33.7%).

In comparison, a study in Bangladesh reported that over two-thirds (68.6%) of mothers were not aware of any health consequences of childhood obesity [25]. Actually, childhood obesity has been implicated in many medical conditions, such as type 2 diabetes, cardiovascular disease, high cholesterol, fatty liver disease, sleep apnea, asthma, gallstones, skin conditions, menstrual abnormalities, impaired balance, and orthopedic problems. Besides, childhood obesity disturbs the social and emotional health of the children [24]. Thus, having a better knowledge of these complications is critical, especially in the existing context of the rising worldwide prevalence of obesity [26].

Furthermore, the absence of knowledge about obesity complications was significantly associated with lower levels of parent's education, low family income, and increased eating of fast foods. Similarly, a negative association between mothers' knowledge levels about obesity and their education and income was found in Malaysia [27]. In Bangladesh, maternal perceptions about obesity and its complications were significantly associated with their knowledge and family income [25]. In addition, it has been concluded that education plays a vital role in the recognition and perceptions of children's correct weight statuses [28].

## Conclusion

A significant proportion of parents underestimated their child's weight status. The proportion of misperception was higher among parents of overweight children. Furthermore, parents' awareness of the negative impact of childhood obesity on health needs to be improved. These results are valuable for developing educational programs and strategies involving parents for proper control of childhood obesity. It is essential to target these incorrect parental perceptions.

## Acknowledgment

None.

## List of Abbreviations

KAUH King Abdulaziz University Hospital

## Conflicts of interest

None.

### Funding

None.

### Consent for publication

Informed consent was obtained from the participants.

### Ethical approval

The study obtained ethical approval from the Research Ethics Committee of College of Medicine at King Abdulaziz University, Jeddah, Saudi Arabia, Unit of Biomedical Ethics, Research Committee, 25-5-1441 Hijri Reference No 9-20.

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### References

- World Health O. Polio vaccines: WHO position paper, March 2016-recommendations. *Vaccine*. 2017;35:1197–9. <https://doi.org/10.1016/j.vaccine.2016.11.017>
- Ginter E, Simko V. Becoming overweight: is there a health risk? *Bratislavské Lekárske Listy*. 2014;115:527–31. [https://doi.org/10.4149/BLL\\_2014\\_102](https://doi.org/10.4149/BLL_2014_102)
- Whitaker RC, Wright JA, Pepe MS, Seidel KD, Dietz WH. Predicting obesity in young adulthood from childhood and parental obesity. *N Engl J Med*. 1997;337:869–73. <https://doi.org/10.1056/NEJM199709253371301>
- Alazzeah AY, AlShammari EM, Smadi MM, Azzeh FS, AlShammari BT, Epuru S, et al. Some socioeconomic factors and lifestyle habits influencing the prevalence of obesity among adolescent male students in the hail region of Saudi Arabia. *Children*. 2018;5(3):39. <https://doi.org/10.3390/children5030039>
- Amer M, Arfaj GA, Alodhayani AA. Children's physical activity awareness among mothers in a Saudi Arabian Health Center. *J Clin Diagn Res*. 2017;11:Oc51–6. <https://doi.org/10.7860/JCDR/2017/25768.9602>
- Al-Enazy W, Al Dahi S, Al Hariri I. Prevalence of overweight and obesity among Saudi primary school students in Tabuk, Saudi Arabia. *Saudi J Obes*. 2014;2:13–8. <https://doi.org/10.4103/2347-2618.137569>
- Al-Hazzaa HM, Abahussain NA, Al-Sobayel HI, Qahwaji DM, Musaiger AO. Lifestyle factors associated with overweight and obesity among Saudi adolescents. *BMC Public Health*. 2012;12:354. <https://doi.org/10.1186/1471-2458-12-354>
- Amin TT, Al-Sultan AI, Ali A. Overweight and obesity and their relation to dietary habits and sociodemographic characteristics among male primary school children in Al-Hassa, Kingdom of Saudi Arabia. *Eur J Nutr*. 2008;47:310–8. <https://doi.org/10.1007/s00394-008-0727-6>
- Reilly JJ, Armstrong J, Dorosty AR, Emmett PM, Ness A, Rogers I, et al. Early life risk factors for obesity in childhood: cohort study. *BMJ*. 2005;330:1357. <https://doi.org/10.1136/bmj.38470.670903.E0>
- Sjostrom CD, Lissner L, Wedel H, Sjostrom L. Reduction in incidence of diabetes, hypertension and lipid disturbances after intentional weight loss induced by bariatric surgery: the SOS Intervention Study. *Obes Res*. 1999;7:477–84. <https://doi.org/10.1002/j.1550-8528.1999.tb00436.x>
- Baughcum AE, Chamberlin LA, Deeks CM, Powers SW, Whitaker RC. Maternal perceptions of overweight preschool children. *Pediatrics*. 2000;106:1380–6. <https://doi.org/10.1542/peds.106.6.1380>
- Genovesi S, Giussani M, Faini A, Vigorita F, Pieruzzi F, Strepparava MG, et al. Maternal perception of excess weight in children: a survey conducted by paediatricians in the province of Milan. *Acta Paediatr*. 2005;94:747–52. <https://doi.org/10.1111/j.1651-2227.2005.tb01975.x>
- Vuorela N, Saha MT, Salo MK. Parents underestimate their child's overweight. *Acta Paediatr*. 2010;99:1374–9. <https://doi.org/10.1111/j.1651-2227.2010.01829.x>
- He M, Evans A. Are parents aware that their children are overweight or obese? Do they care? *Can Fam Physician*. 2007;53:1493–9.
- Muhammad NA, Omar K, Shah SA, Muthupalaniappen LA, Arshad F. Parental perception of their children's weight status, and its association with their nutrition and obesity knowledge. *Asia Pac J Clin Nutr*. 2008;17:597–602.
- Al-Mohaimeed AA. Parents' perception of children's obesity, in Al-Qassim, Saudi Arabia. *J Fam Community Med*. 2016;23:179–83. <https://doi.org/10.4103/2230-8229.189134>
- Aljunaibi A, Abdulle A, Nagelkerke N. Parental weight perceptions: a cause for concern in the prevention and management of childhood obesity in the United Arab Emirates. *PloS One*. 2013;8:e59923. <https://doi.org/10.1371/journal.pone.0059923>
- Rietmeijer-Mentink M, Paulis WD, van Middelkoop M, Bindels PJ, van der Wouden JC. Difference between parental perception and actual weight status of children: a systematic review. *Matern Child Nutr*. 2013;9:3–22. <https://doi.org/10.1111/j.1740-8709.2012.00462.x>
- Lundahl A, Kidwell KM, Nelson TD. Parental underestimates of child weight: a meta-analysis. *Pediatrics*. 2014;133:e689–703. <https://doi.org/10.1542/peds.2013-2690>
- Vanhala ML, Keinänen-Kiukaanniemi SM, Kaikkonen KM, Laitinen JH, Korpelainen RI. Factors associated with parental recognition of a child's overweight status—a cross-sectional study. *BMC Public Health*. 2011;11:665. <https://doi.org/10.1186/1471-2458-11-665>
- Ha Y, Jacobson Vann JC, Choi E. Prevalence of overweight and mothers' perception of weight status of their children with intellectual disabilities in South

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- Korea. *J Sch Nurs.* 2010;26:212–22. <https://doi.org/10.1177/1059840509358712>
22. Al-Hussaini A, Bashir MS, Khormi M, ALTuraiki M, Alkhamis W, Alrajhi M, et al. Overweight and obesity among Saudi children and adolescents: where do we stand today? *Saudi J Gastroenterol.* 2019;25:229–35. [https://doi.org/10.4103/sjg.SJG\\_617\\_18](https://doi.org/10.4103/sjg.SJG_617_18)
23. Park MH. Half of parents underestimate the weight of their overweight or obese children. *Evid Based Nurs.* 2015;18:47. <https://doi.org/10.1136/eb-2014-101876>
24. Sahoo K, Sahoo B, Choudhury AK, Sofi NY, Kumar R, Bhadoria AS. Childhood obesity: causes and consequences. *J Family Med Prim Care.* 2015;4:187–92. <https://doi.org/10.4103/2249-4863.154628>
25. Hossain MS, Siddiqee MH, Ferdous S, Faruki M, Jahan R, Shahik SM, et al. Is childhood overweight/obesity perceived as a health problem by mothers of preschool aged children in Bangladesh? A community level cross-sectional study. *Obesity Facts.* 2019;16:202. <https://doi.org/10.3390/ijerph16020202>
26. Mabilia Babela JR, Nika ER, Nkounkou Milandou KGC, Missambou Mandilou SV, Bouangui Bazolana SBA, Monabeka HG, et al. Knowledge, attitudes, and practices of parents facing child and adolescent obesity in Brazzaville, Congo. *Glob Pediatr Health.* 2016;3:2333794X16675546. <https://doi.org/10.1177/2333794X16675546>
27. Hatta N, Rahman NAA, Rahman NIA, Haque MJIMJ. Knowledge, attitude and practices among mothers regarding childhood obesity at Kuantan, Malaysia. *Int Med J.* 2017;24:200–4.
28. Hochdorn A, Faleiros VP, Camargo BV, Bousfield AB, Wachelke JF, Quintao IP, et al. Obese children are thin in parents' eyes: a psychologically, socially, or culturally driven bias? *J Health Psychol.* 2018;23:114–26. <https://doi.org/10.1177/1359105316676328>