

Maternal misperception of under-five children weight status and associated factors: A cross-sectional study

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Abstract

Maternal perceptions, about the nutritional status of their children, may have implications for timely health care seeking and feeding behaviour. Shreds of evidence are limited in this area that assessed maternal perception about the nutritional status of the children in the context of Bangladesh. The objective of this study is to assess the differences in mothers' perceptions about their children's nutritional status who are less than 5 years of age and their associated factors in the context of urban slum areas. A cross-sectional study (Quantitative approach) was conducted in two of the largest urban slums of Dhaka city. A total of 437 mother–children dyads were included in the final analysis. The outcome of interest was the mother's 'varied perceptions' regarding the nutritional status of their children under five. 'Varied perception' refers to the difference between a mother's subjective assessment of her child's nutritional condition and the anthropometrically measured nutritional status. The prevalence of mother's varied perceptions was around 46%, and among them, 37% of mothers underestimated and 9% overestimated their child's nutritional status. 'The child doesn't want to eat' (AOR = 3.69; 95% CI: 2.34–5.85; $p < 0.001$) and 'Feels light when carried' (AOR = 3.39; 95% CI: 1.69–6.81; $p = 0.001$) were the significant reasons behind the mother's perception about the nutritional status of their under-five children. About one in two mothers' perceptions about their children varied from the anthropometry-derived status. Various research findings indicate that providing health education on proper feeding practices for children, along with anthropometric measurements, can assist mothers in enhancing their understanding and assessing their child's nutritional status with greater accuracy. Further qualitative research may be instrumental in getting deeper insights into maternal perception to develop context-specific interventions.

KEYWORDS

children, maternal perception, nutrition, overweight, underweight

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1 | INTRODUCTION

Globally, there was a significant decrease in the prevalence of stunting, wasting and being underweight among children under the age of five from 2011 to 2020 (WHO, 2020). Nevertheless, the count of overweight children under the age of five has risen by 4 million between 2000 and 2023 (WHO, 2023). In Bangladesh, the percentage of stunted children under five decreased from 31% to 24% between 2017–2018 and 2022. Meanwhile, the proportion of underweight children remained stable, and wasting increased from 8% to 11% (NIPORT & ICF, 2023). There remains considerable progress needed to reach the World Health Organization's global nutrition goal by 2025, which aims to decrease stunting by 40% and sustain childhood wasting at less than 5% (WHO, 2014). Comprehending maternal perspectives on their children's nutritional status is essential for the prevention and management of nutritional disorders, given that mothers are the primary caregivers (Francescato et al., 2014).

Perception refers to recognizing and interpreting sensory inputs, enabling individuals to make sense of their immediate surroundings (Williams, 2018). Mothers' awareness of changes in their child's nutritional status, which may raise health concerns, initiates the first step in seeking medical assistance and health care (Francescato et al., 2014). Typically, mothers bear primary responsibility for child-rearing, particularly regarding feeding practices. Studies indicate that mothers' beliefs and behaviours regarding their children's dietary patterns are shaped by their perceptions of their children's nutritional well-being (Aparício et al., 2013; Binkin et al., 2013; Webber et al., 2010). A child's attributes, as perceived by parents, significantly influence how they feed their children to promote their health and welfare (Grimmett et al., 2008). In this context, it can be inferred that the association between feeding behaviours and children's nutrition is influenced by the mother's perception of the child's weight (Grimmett et al., 2008). Mothers who perceive their children as either overweight or underweight typically demonstrate heightened levels of concern (Francis et al., 2001). Previous studies suggest that mothers are more inclined to restrict their children's diets if they harbour concerns about their weight (Francis et al., 2001). Conversely, mothers who express worries about their child being underweight often exert pressure on the child to consume more food (Francis et al., 2001).

It is worrying that when mothers wrongly perceive their normal-weight children as too thin or overweight, they may feel dissatisfied and try to change their eating habits to make them gain or lose weight, even though the children are already healthy (Aparício et al., 2013; Webber et al., 2010). According to a meta-analysis, more than half of the parents misjudge their child's weight status, which is referred to as 'parental misperception' (Lundahl et al., 2014). Additionally, a study revealed that 23.5% of mothers of children with normal weight overestimated their children's nutritional status, while 46% of them underestimated it (Pedroso et al., 2017). A study from Bangladesh stated that only 3% of mothers accurately perceived their children's accurate nutritional status (Hossain et al., 2019). The double burden of malnutrition could be significantly

Key messages

- The importance of mothers' awareness of their children's nutritional status cannot be overstated when it comes to both providing appropriate nourishment and promptly seeking health care for their children.
- Around half of the mothers misperceived their children's nutritional status, and among them, 37% underestimated their children's nutritional status.
- Children's feeding behaviour and weight of the child while carrying were the significant reasons behind their perception
- Initiatives directed towards prevention should take into account the significance of enhancing parental awareness regarding potential risks. This serves as an initial step in mitigating health hazards for children associated with malnutrition.

reduced globally if mother-centric health awareness programs were implemented, taking into account the national or regional context (Hossain et al., 2020).

As the majority of mothers in Bangladesh (85%) take care of their children primarily at home, they play a crucial part in the planning and preparation of the family's meals (Hossain et al., 2020). So, it is very important to understand how mothers see or assess their children's nutritional status. Several studies were conducted regarding the maternal perception of children's nutritional status worldwide, where mothers' perception significantly differs from their children's measured nutritional status (Aparício et al., 2013; Guevara-Cruz, 2012; Hazhin, 2021; Neli et al., 2021; Parkinson et al., 2017). In the context of Bangladesh, we have very limited evidence regarding the topic, as the perception of mothers was explored on how they recognize overweight and obesity of their preschool-going children aged 4–7 years in Jamalpur city (Hossain et al., 2019). In their study, they found merely 3.1% of children were viewed as overweight or obese by their mothers. While 35% of mothers acknowledged childhood overweight or obesity as a health concern, a significant majority (68.6%) were unaware of its health implications (Hossain et al., 2019). However, our study will focus on mothers having children under the age of five regarding their perception of their children's nutritional status when compared to anthropometrically assessed nutritional status. We will also look out for the associated factors behind their perception. Population demography is different in urban slums from the rural and urban context as the residents come from low socioeconomic status and mostly work as informal sector (daily wage worker) workers (Fakir & Khan, 2015). Urban slums are also underprivileged in nutritional data for children under five due to a lack of research (Concern Worldwide, 2022). Thus, this study aimed to evaluate the factors influencing mothers' varied perceptions of their children's nutritional status compared to the actual measured nutritional status among children under the age of five living in urban slums of Bangladesh.

2 | METHODS

2.1 | Study design

The cross-sectional study was conducted between November 2022 and January 2023.

2.2 | Study site and population

Data were collected from the mothers having children aged 0–5 years residing in the slum areas of Dhaka city. In both city corporations of Dhaka, there are approximately 5000 slums housing over 4 million residents (Hasan et al., 2022). The Korail slum in Gulshan and the Dholpur slum in Jatrabari are the two largest slums that we purposefully chose from distinct geographically representative sections of the Dhaka metropolis. The region's household structure, environmental elements, religious beliefs and traditions are similar to other slums in Dhaka city. These slums' residents come from a variety of enduring addresses, and the regions were big enough to draw enough research subjects for the study (Uzma et al., 1999). Finally, two distinct slums from two separate places were used to counteract the lack of variation that would arise from selecting the slums from just one area. This makes study results generalizable for the target population. Our study participants were mothers with children under 5 years old who had been residing in the aforementioned selected slum areas for more than 6 months. For the mother who has more than one under-five child, we selected one randomly for inclusion of the child. Mothers with children older than 5 years, those not residing in our selected study sites, those who had been living in the selected area for less than 6 months, mothers with speech difficulties or terminal illnesses and those who did not provide consent to participate were excluded from the study. Before conducting the interview, all participants provided written consent, and ethical approval was granted by the Institutional Review Board of BRAC James P Grant School of Public Health.

2.3 | Sample size and sampling technique

For the study, we presumed that 50% of mothers hold diverse perceptions regarding the weight of their children to maximize the sample size. We considered a 5% margin of error and a 95% confidence interval. After considering a 90% response rate, our sample size was 427. We followed systematic random sampling to select the participants. Initially, upon arriving at the slums, we identified landmarks (the Awami League office in Dholpur and The Ershad School field in Korail), and from those points, we sought out five mothers meeting our inclusion criteria from five households in each slum. Subsequently, we randomly chose one household and proceeded to interview every third household thereafter, resulting in a total of 440 interviews conducted with the mothers. However, three respondents opted out in the middle of the interviews, and we excluded them from our analysis. Finally, we included 215

participants from the Dholpur slum and 222 from the Korail slum, a total of 437 participants for the final data analysis.

2.4 | Study tool

Following an extensive literature review, we devised a questionnaire guideline to facilitate our data collection process. The questionnaire was reviewed by the research team and authors. Before commencing data collection, the revised questionnaire was translated into Bangla and subjected to a pretest in the Sat-tola slum, involving 50 mothers with children under 5 years old.

2.5 | Dependent variable

We compared the mothers' perceived nutritional status (underweight and overweight) of under-five children with their measured nutritional status (under-five children). If the two (perceived and measured) did not match, that was considered as 'varied perception' of mothers. This varied perception of mothers about the nutritional status of their under-five children was our dependent variable. The varied perception refers to an 'overestimation' or 'underestimation' of the under-five child's nutritional status (weight for age and weight for height).

We measured maternal perception by asking questions about how they feel about their under-five children's nutritional status: very underweight, underweight, normal, overweight, very overweight. Earlier conducted studies also followed a similar method for acquiring maternal perception (Binkin et al., 2013; Kroke et al., 2006; Parkinson et al., 2017). Again, during analysis, we recategorized the response into three groups: 'underweight' (very underweight and underweight), 'normal weight' and 'overweight' (overweight and very overweight) by following literature reviews for better comparison with anthropometrically measured nutritional status (Kroke et al., 2006).

WHO's weight-for-age and weight-for-height z-score were used to assess the nutritional status of under-five children. According to WHO, if the z-score for weight-for-age is less than -2 standard deviations (SD), it is denoted as underweight, and if the z-score for weight-for-height is more than $+2$ SD, it is marked as overweight. Following WHO's method for our study, if the weight-for-age z-score lay <-2 SD, we denoted it as 'underweight', and if it was ≥ -2 SD, it was designated as 'normal weight'; if the weight-for-height z-score lay $>+2$ SD, it was 'overweight', and if $\leq +2$ SD, then it was denoted as 'normal weight' (WHO, 2008).

2.6 | Covariates

Following a thorough review of literature and background information, the subsequent covariates were identified: children's age, mother's occupation, mother's level of education, marital status, husband's occupation, husband's level of education, monthly household income, religion and reason for perception were the socio-

demographic factors considered as independent variables in our study (AlHasan et al., 2018; Blanchet et al., 2019; Eli et al., 2014; Gorlick et al., 2021; Hong et al., 2019; Hossain et al., 2019; Lindsay et al., 2011; Warkentin et al., 2018). A mother's lower level of education was linked to a higher likelihood of misperceiving their child's nutritional status (Baughcum et al., 2000; Blanchet et al., 2019; Hossain et al., 2019). Similarly, low household income was associated with maternal misperception (Blanchet et al., 2019; Hong et al., 2019; Hossain et al., 2019). Maternal misperception was also linked to unemployment among mothers and having a male child (Hong et al., 2019; Warkentin et al., 2018). Additionally, younger children were more likely to have their nutritional status misperceived by their mothers (AlHasan et al., 2018; Blanchet et al., 2019).

2.7 | Data collection procedure and quality control

We conducted our data collection through face-to-face interviews with the mothers using a structured questionnaire. The questionnaire was digitized through the utilization of a Google Form, facilitating data collection via a tablet computer. To measure the weight of children who are unable to stand still or alone on the weighing machine (both under 2 years and above 2 years of age), we followed a procedure where we initially measured the combined weight of the child with their mother. Subsequently, we measured the weight of the mother alone, and then we deducted this measurement from the combined weight to determine the weight of the child. And for children above 2 years of age who can stand still, we measured their weight directly by using the weighing machine. For both measurements, we used TANITA UM-070 as our weighing scale. A portable height and length measuring stadiometer was used to measure the length or height of the children. Before measuring weight and height/length, we calibrated our instruments every morning before the data collection procedure to get an accurate measurement. Before measurement, we asked our participants to remove shoes and heavy clothes from their children. We recorded our weight and height data to the nearest decimal place. For height and weight, we took two measurement values and averaged them. If any value exceeds 0.5 cm or 0.1 kg, we took a third measurement and averaged the two nearest values. For all of the above, we trained our data collectors extensively to conduct interviews and take measurements accurately. For COVID-19-related safety measures, we requested our participants to put on a mask while interviewing. We sanitized our hands and measuring devices before and after the procedure was conducted and maintained a safe distance from the participants. Each day after data collection, a team meeting was held, and all responses and measurements were cross-checked by peers.

2.8 | Data analysis

After collecting data on Google Form, we extracted our data into a Microsoft Excel file. We looked for any missing responses and inconsistencies in the data. We first coded the variables using the

Excel file and then imported the Excel file into STATA 17 software for analysis. The variable names and labels were checked. Inconsistencies for the missing values were thoroughly checked and corrected if there were any. To facilitate extensive analysis, labelling the variables, recoding of values and categorization of variables were done. Participant attributes are depicted through means for continuous variables and percentages for categorical variables. The characteristics between the two groups were compared using the independent sample t-test for the continuous variable and the chi-squared test for the categorical variable stratified by matched and varied perceptions of the mothers. A multivariable logistic regression was performed to estimate the unadjusted and adjusted odds ratio to assess the association between dependent and independent variables. For the adjusted model, we selected the variables (child age, sex of child, mother's age, mother's education, mother's occupation, father's education, father's occupation) regarding the literature review (Binkin et al., 2013; Neli et al., 2021). Moreover, for subgroup analysis, a multivariable logistic regression was performed to estimate the unadjusted and adjusted odds ratio to assess the determinants of under- and overestimation.

2.9 | Ethical consideration

The study got ethical approval from the Institutional Review Board of BRAC James P Grant School of Public Health. Each participant was provided informed written consent for the interview after being informed of the study's purpose, the voluntary nature of their participation and their right to withdraw at any moment during the interview. Confidentiality was maintained by keeping the participants' identities secret from outside parties. To safeguard the participants' privacy, a unique ID was provided for each completed questionnaire. The study's participants were free to quit at any time without repercussion. A financial incentive or remuneration was not given to individuals for participating in the study, either.

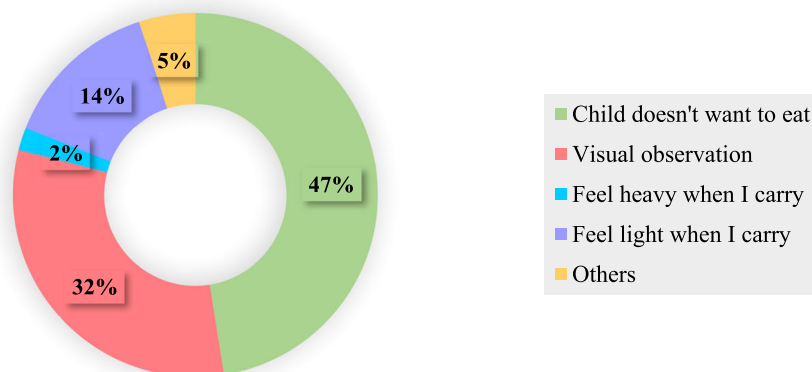
3 | RESULTS

3.1 | Characteristics of the study participants

For the final analysis, 437 mothers were included in the study, including 215 (49.2%) from Dholpur and 222 (50.8%) from Korail slum. The prevalence of varied perceptions of mothers was around 46%. Among them (who had varied perceptions), 37% of mothers underestimated and 9% overestimated their child's nutritional status. Mothers with varied perceptions, nearly half (47.5%), cited their child's refusal to eat as the basis for their perception, while 31.5% attributed it to visual observation (Figure 1).

Table 1 depicts the prevalence of the mother's perception (matched and varied) across the sociodemographic characteristics of the study participant. The mean age of mothers was higher for mothers who had varied perceptions (26.0) than matched perceptions (25.4). Mothers' perceptions varied when the mean age of their children was less (25.5)

FIGURE 1 Reasons behind the varied perception of mothers.



compared to child age (28.1) when perception matched. When the mean monthly household income is less (15,940.0), mothers' perceptions varied more, compared to when the monthly mean household income is more (17,505.5), their perceptions matched more. Almost all of the mothers were Muslim by religion and homemaker by occupation, and around half of them, had varied perceptions (45.5%). Most of the mothers completed primary-level education and around half of them had varied perceptions (47.0%). Most of the mothers mentioned that 'visual observation' was the main reason behind their perception, and most of their perceptions matched (68.0%). On the other hand, mothers who stated 'child does not want to eat' as the reason behind their perception, the majority of their perception varied (62.1%).

3.2 | Determinants of varied perception

The results of multivariable logistic regression are shown in Table 2. Model 1 (unadjusted) showed that mothers who said their child refuses to consume food (COR = 3.48; 95% CI: 2.24–5.43; $p < 0.001$) or feel light when lifted (COR = 3.31; 95% CI: 1.70–6.42; $p < 0.001$) as the reasons behind their perception were positively associated with varied perception.

In Model 2 (adjusted), after adjusting with reason behind perception, child age, sex of child, mother's age, mother's education, mother's occupation, father's education and father's occupation simultaneously, we found mothers who stated child refuses to consume food (AOR = 3.69; 95% CI: 2.34–5.85; $p < 0.001$) or feel light when lifted (AOR = 3.39; 95% CI: 1.69–6.81; $p = 0.001$) as reasons for their perception were positively associated with varied perception, whereas each month's increase in children's age (AOR = 0.99; 95% CI: 0.97–1.00; $p = 0.024$) was inversely associated with varied perception of mothers.

3.3 | Determinants of under- and overestimation

The results of multivariable logistic regression for the determinants of under- and overestimation are shown in Table 3. For underestimation,

mothers who stated child refuses to consume food (AOR = 10.00; 95% CI: 5.80–16.91; $p < 0.001$) or feel light when lifted (AOR = 8.77; 95% CI: 4.12–18.66; $p < 0.001$) as the reasons behind their perception and being male child (AOR = 1.84; 95% CI: 1.22–2.76; $p = 0.003$) were positively associated with underestimation, whereas each month's increase in children's age (COR = 0.98; 95% CI: 0.97–0.99; $p = 0.003$) was inversely associated with underestimation.

For overestimation, mothers who stated their child refuses to consume food (AOR = 0.06; 95% CI: 0.01–0.26; $p < 0.001$) as the reasons behind their perception and being a male child (AOR = 0.44; 95% CI: 0.21–0.91; $p = 0.027$) were inversely associated with underestimation.

4 | DISCUSSION

In our study, we explored how much the perception of mothers varied from the measured nutritional status of their under-five children and associated factors in slum areas. We identified that about half of the mothers inappropriately perceived the nutritional status of their under-five children. Odds of having varied perceptions was positively associated with the reason for maternal perception and monthly household income, while increasing child age and home delivery as a place of delivery were protective factors for varied perception.

We found around 37 out of 100 mothers underestimated and around 9 out of 100 mothers overestimated their under-five child's nutritional status. In the study 'Association between maternal perceptions and actual nutritional status for children in a study group in Mexico', 37.8% of mothers underestimated the nutritional status of their overweight and obese children (Guevara-Cruz, 2012). Other published studies from the USA and Spain found a similar result, where nearly one-third of mothers underestimated their children's nutritional status (Genovesi et al., 2005; Maynard et al., 2003). Underestimation of children's nutritional status is a common phenomenon across the world, especially for overweight children (Hochdorn et al., 2018). The growing rates of childhood obesity have been attributed to parents' inability to identify their

TABLE 1 Sociodemographic characteristics of study respondents stratified by matched and varied perception.

Characteristics	Matched, n = 237 (%)	Varied, n = 200 (%)	P Value
Mother's age (years)	25.4	26.0	0.323
Age of children (months)	28.1	25.5	0.083
Household income (monthly in BDT)	17,505.5	15,940.0	0.084
Mother's income (monthly in BDT)	1241.8	1131.5	0.720
Religion			
Muslim	226 (54.5)	189 (45.5)	0.683
Non-Muslim	11 (50.0)	11 (50.0)	
Marital status			
Married	228 (53.8)	196 (46.2)	0.271
Others ^a	9 (69.2)	4 (30.8)	
Area			
Dholpur	110 (51.2)	105 (48.8)	0.205
Korail	127 (57.2)	95 (42.8)	
Sex of child			
Female	122 (57.3)	91 (42.7)	0.213
Male	115 (51.3)	109 (48.7)	
Slum living duration (years)			
1–5	65 (56.0)	51 (44.0)	0.956
6–10	49 (53.3)	43 (46.7)	
11–15	42 (55.3)	34 (44.7)	
16 or more	81 (52.9)	72 (47.1)	
Mother's occupation			
Homemaker	193 (54.5)	161 (45.5)	0.804
Working ^b	44 (53.0)	39 (47.0)	
Mother's level of education ^c			
Preprimary or none	80 (52.3)	73 (47.7)	0.337
Primary completed	114 (53.0)	101 (47.0)	
Secondary completed and above	43 (62.3)	26 (37.7)	
Father's level of education			
Preprimary or none	82 (49.4)	84 (50.6)	0.269
Primary completed	119 (56.7)	91 (43.3)	
Secondary completed and above	36 (59.0)	25 (41.0)	
Father's occupation ^d			
Service	85 (54.1)	72 (45.9)	0.242
Skilled worker	62 (60.2)	41 (39.8)	
Unskilled worker	53 (46.9)	60 (53.1)	

TABLE 1 (Continued)

Characteristics	Matched, n = 237 (%)	Varied, n = 200 (%)	P Value
Small trade	24 (53.3)	21 (46.7)	
Others	13 (68.4)	6 (31.6)	
Financial decision maker			
Mother	16 (50.0)	16 (50.0)	0.952
Father	141 (54.4)	118 (45.6)	
Both parents	41 (54.0)	35 (46.0)	
Paternal grandfather	11 (61.1)	7 (38.9)	
Paternal grandmother	21 (51.2)	20 (48.8)	
Other ^e	7 (63.6)	4 (36.4)	
Health care seeking decision maker			
Both parents	174 (57.6)	128 (42.2)	0.084
One parent and other family members	61 (47.3)	68 (52.7)	
Both parents with other family members	2 (33.3)	4 (66.7)	
Reason behind perception			
The child doesn't want to eat	58 (37.9)	95 (62.1)	<0.001
Visual observation	134 (68.0)	63 (32.0)	
Feels heavy when carried	11 (73.3)	4 (26.7)	
Feels light when carried	18 (39.1)	28 (60.9)	
Others ^f	16 (61.5)	10 (38.5)	

Abbreviation: BDT, Bangladeshi taka.

^aOthers = separated, divorced and refused to answer.

^bWorking = petty business, employee, garment worker, NGO worker, teacher, house-maid, skilled (sewing, embroidery, cook), unskilled—a day labourer.

^cPreprimary or none = do not know, never went to school and up to class 4; primary completed = Class 5 and up to class 10; secondary completed and above = SSC/Dakhil, BA/BSc/BCom/Fazil/graduate/BA (honors), Diploma/vocational, Hafezi/Qawmi/Kharizi, MA/PhD/Kamil.

^dService (garments, security), skilled (plumber, mechanic, electrician, hair dresser, blacksmith, goldsmith, cook, driver), unskilled (rickshaw/van/wheelbarrow/baby taxi puller, unskilled day labourer, hawker), small trade (petty businessman, salesman), others (do not know, no work, living abroad).

^eOther = father, mother, brother, brother-in-law and husband.

^fOthers = child illness, mother's illness, inability to provide food, recently measured.

children's excess weight (Katz, 2015). Children whose weight statuses were underestimated as children gain the most weight in adulthood (Kroke et al., 2006). Overweight and obese children tend to develop non-communicable diseases in the future (Ng et al., 2011).

TABLE 2 Associated risk factors of varied perception with crude odds ratio (COR) and adjusted odds ratio (AOR).

Characteristics	Model 1		Model 2	
	COR (95% CI)	p Value	AOR (95% CI)	p Value
Reason for perception				
Visual observation	Reference			
The child doesn't want to eat***	3.48 (2.24–5.43)	<0.001	3.69 (2.34–5.85)	<0.001
Feels heavy when carried	0.77 (0.24–2.52)	0.670	0.84 (0.24–2.90)	0.785
Feel light when carried***	3.31 (1.70–6.42)	<0.001	3.39 (1.69–6.81)	0.001
Others	1.33 (0.57–3.10)	0.509	1.23 (0.52–2.97)	0.639
Mother's age (years)	1.02 (0.98–1.05)	0.322	1.02 (0.98–1.06)	0.365
Age of children (months)*	1.00 (0.98–1.00)	0.083	0.99 (0.97–1.00)	0.024
Household income	1.00 (1.00–1.00)	0.086	1.00 (0.99–1.00)	0.154
Mother's income	1.00 (1.00–1.00)	0.719	1.00 (0.99–1.00)	0.306
Sex of child				
Female	Reference		Reference	
Male	1.27 (0.87–1.85)	0.213	1.37 (0.93–2.03)	0.107
Mother's occupation				
Homemaker	Reference			
Working	1.06 (0.66–1.72)	0.804	1.21 (0.72–2.04)	0.463
Mother's level of education				
Preprimary or none	Reference			
Primary completed	0.97 (0.64–1.47)	0.889	1.20 (0.76–1.92)	0.431
Secondary completed and above	0.66 (0.37–1.18)	0.165	0.84 (0.41–1.72)	0.628
Father's occupation				
Service	Reference			
Skilled worker	0.78 (0.47–1.29)	0.336	0.78 (0.47–1.32)	0.365
Unskilled worker	1.34 (0.82–2.17)	0.241	1.27 (0.74–2.20)	0.390
Small trade	1.03 (0.53–2.01)	0.924	1.09 (0.55–2.16)	0.797
Others	0.54 (0.20–1.51)	0.242	0.50 (0.18–1.45)	0.203
Father's level of education				
Preprimary or none	Reference			
Primary completed	0.75 (0.50–1.12)	0.161	0.83 (0.53–1.29)	0.403
Secondary completed and above	0.68 (0.37–1.23)	0.200	0.81 (0.40–1.67)	0.572
Financial decision maker				
Mother	Reference			
Father	0.84 (0.40–1.75)	0.635	0.69 (0.30–1.61)	0.391
Both parents	0.85 (0.37–1.95)	0.708	0.70 (0.28–1.75)	0.443
Paternal grandfather	0.64 (0.20–2.06)	0.450	0.52 (0.14–1.86)	0.313

(Continues)

TABLE 2 (Continued)

Characteristics	Model 1		Model 2	
	COR (95% CI)	p Value	AOR (95% CI)	p Value
Paternal grandmother	0.95 (0.38–2.40)	0.918	0.87 (0.31–2.47)	0.793
Other	0.57 (0.14–2.34)	0.437	0.49 (0.11–2.18)	0.351

Note: COR for the unadjusted model, AOR for the adjusted model, adjusted for age of children, mother's age, mother's level of education, mother's occupation, father's level of education, father's occupation. Data are odds ratio per 1-SD increment for continuous variable or compared with the reference group for categorical variable. Age of children (per-1SD) = 15.7 months; Mother's age (per-1SD) = 5.6 years; Household income (per-1SD) = 9425.8 taka; Mother's income (per-1SD) = 3187.7 taka. 'Other' categories are defined in Table 1.

Abbreviations: CI, confidence interval; SD, standard deviation.

*** $p \leq 0.001$; * $p < 0.05$.

Overestimation of children's nutritional status is also evident from a study conducted in Brazil (Pedroso et al., 2017). Concerningly, moms' discontent with their child's noticeable thinness or overweightness might originate from both under- and overestimations of the nutritional condition of youngsters (Aparício et al., 2013; Pedroso et al., 2017). Children's feeding control behaviours are influenced by parental perception, which may be moderated by maternal concerns about the child's nutritional state (Aparício et al., 2013). According to previous research, mothers are more likely to restrict their children's diets the more concerned they are about their weight (Arpini et al., 2015). In contrast, mothers who worry about their kids being underweight sometimes pressure the child to eat (Arpini et al., 2015), which might in turn alter the nutritional status of children and can lead them to malnutrition.

As a reason behind their perception, mothers who stated 'child doesn't want to eat' or 'feel light when carried' have more varied perceptions than mothers who stated 'visual observation' as a reason for their perception. This finding implies that mothers who claimed that their under-five child refuses to feed or feel light while carrying have a more varied impression of their child's nutritional health. It is a common belief of mothers that their children are fed poorly or refuse to feed (Kerzner et al., 2015). Studies from the UK and Bangladesh also suggested mothers' lack of knowledge about the feeding practices (age-appropriate portion size) of their children (Crocker et al., 2009; Hackett et al., 2015). Furthermore, mothers adjust their feeding approach based on their children's perceived nutritional status (Birch et al., 2001). While solely perceiving their child's nutritional status may not directly alter feeding behaviour, it can contribute to changes in feeding practices when combined with other influencing factors.

In our study, we also found that with the increase in child age, mothers' ability to perceive children's nutritional status precisely also increases. Our study findings are similar to earlier published research in the USA (Maynard et al., 2003). With the increased age, the body size of the children also increases, which helps mothers to visualize and assess their children's nutritional status more accurately. The result means that mothers find it hard to perceive their children's nutritional status when the age of the child is less because of their smaller body size, but when their children's body size increases with increasing age, they perceive more precisely.

Mothers who underestimated their child's nutritional status attributed their perception mainly to the child's refusal to eat and their feeling light when lifted. Likewise, previous studies showed mothers perceive their children's nutritional status depending on the feeding behaviour of their children (Birch et al., 2001). Parental underestimation of a child's weight was linked to a higher likelihood of applying pressure-to-eat tactics (Costa et al., 2022; Xiang et al., 2021). Collectively, these results suggest that maternal pressure to eat may stem from the mother's perception of the child as being thin and her desire for the child to weigh more. Mothers tend to underestimate their child's nutritional status when they perceive their child to be lightweight when carrying or lifting them. Parents might underestimate their child's weight because they hold the belief that a heavier child is synonymous with better health (Campbell et al., 2006).

Maternal underestimation was noted in boys, aligning with findings from other studies (De La O et al., 2009; Hong et al., 2019; Wald et al., 2007; Warkentin et al., 2018). This finding could be linked to the perception in Asian cultures (Shu Chen et al., 2014), where being overweight is viewed positively as a sign of prosperity, especially for boys, contrasting with the emphasis placed on thinness for girls (Moore et al., 2012). As the child's age increases, the likelihood of mothers underestimating their child's nutritional status decreases. Our result aligns with existing literature, indicating that child age significantly influences parental perception (AlHasan et al., 2018; Eckstein et al., 2006).

The overestimation of a child's nutritional status by mothers decreases significantly when they report the child's refusal to eat and when the child is male. We already found that both of these factors significantly contribute to mothers underestimating their child's nutritional status, which might explain the findings for overestimation.

Several limitations of the present study warrant consideration. First, we studied the participants only from the urban slum areas, which may limit the generalizability of the results. Second, due to a cross-sectional study design, the true relationship between mothers' varied perception and their determinants might have been somewhat diluted. Third, we did not evaluate maternal nutrition-related knowledge, attitudes and practices, which could have offered a more comprehensive understanding of maternal perception. Fourth, as this study was conducted as a Summative Learning Project (SLP) for the

TABLE 3 Associated risk factors of under- and overestimation with crude odds ratio (COR) and adjusted odds ratio (AOR).

Characteristics	Underestimation			Overestimation		
	COR (95% CI)	p Value	AOR (95% CI)	p Value	COR (95% CI)	p Value
Reason for perception						
Visual observation	Reference		Reference		Reference	
The child doesn't want to eat***	8.30 (5.02–13.71)	0.000	10.00 (5.80–16.91)	0.000	0.07 (0.02–0.29)	0.000
Feels heavy when carried	-	-	-	-	1.88 (0.56–6.26)	0.307
Feels light when carried***	8.33 (4.11–16.87)	0.000	8.77 (4.12–18.66)	0.000	-	-
Others	3.35 (1.39–8.05)	0.007	3.70 (1.46–9.39)	0.006	-	-
Mother's age (years)	1.01 (0.97–1.04)	0.651	1.01 (0.98–1.05)	0.454	1.03 (0.97–1.09)	0.330
Age of children (months)*	0.99 (0.97–1.00)	0.020	0.98 (0.97–0.99)	0.003	1.00 (0.99–1.03)	0.357
Household income	1.00 (0.99–1.00)	0.608	1.00 (0.99–1.00)	0.472	1.00 (0.99–1.00)	0.028
Mother's income	1.00 (0.99–1.00)	0.933	1.00 (0.99–1.00)	0.401	1.00 (0.99–1.00)	0.622
Sex of child						
Female	Reference		Reference		Reference	
Male*	1.67 (1.13–2.47)	0.010	1.84 (1.22–2.76)	0.003	0.46 (0.23–0.93)	0.031
Mother's occupation						
Homemaker	Reference		Reference		Reference	
Working	1.15 (0.71–1.88)	0.573	1.46 (0.85–2.50)	0.169	0.78 (0.32–1.94)	0.599
Mother's level of education						
Preprimary or none	Reference		Reference		Reference	
Primary completed	1.09 (0.71–1.67)	0.696	1.22 (0.75–1.99)	0.414	0.73 (0.36–1.47)	0.379
Secondary completed and above	0.87 (0.48–1.58)	0.638	0.84 (0.40–1.79)	0.658	0.36 (0.10–1.28)	0.116
Father's occupation						
Service	Reference		Reference		Reference	
Skilled worker	0.76 (0.45–1.29)	0.310	0.79 (0.46–1.36)	0.400	1.02 (0.40–2.58)	0.971
Unskilled worker	0.96 (0.58–1.58)	0.861	1.00 (0.57–1.78)	0.989	2.29 (1.05–4.97)	0.036
Small trade	1.41 (0.73–2.76)	0.309	1.57 (0.79–3.14)	0.202	-	-
Others	0.75 (0.27–2.07)	0.573	0.67 (0.23–1.96)	0.462	-	-

(Continues)

TABLE 3 (Continued)

Characteristics	Underestimation			Overestimation		
	COR (95% CI)	p Value	AOR (95% CI)	p Value	AOR (95% CI)	p Value
Father's level of education						
Preprimary or none	Reference		Reference		Reference	
Primary completed	0.95 (0.62–1.44)	0.798	0.97 (0.61–1.54)	0.882	0.49 (0.25–1.00)	0.051
Secondary completed and above	0.92 (0.50–1.70)	0.795	0.97 (0.46–2.04)	0.933	0.36 (0.10–1.24)	0.106
Financial decision maker						
Mother	Reference		Reference		Reference	
Father	1.16 (0.54–2.51)	0.703	1.18 (0.48–2.85)	0.721	0.45 (0.16–1.30)	0.141
Both parents	0.88 (0.37–2.11)	0.777	0.82 (0.31–2.16)	0.689	0.91 (0.29–2.88)	0.878
Paternal grandfather	0.95 (0.28–3.24)	0.941	0.99 (0.26–3.74)	0.984	0.32 (0.03–2.96)	0.314
Paternal grandmother	1.65 (0.64–4.28)	0.304	1.75 (0.60–5.17)	0.308	0.14 (0.01–1.22)	0.075
Other	1.09 (0.26–4.55)	0.905	1.13 (0.25–5.16)	0.870	-	-

Note: Multivariable logistic regression to assess the determinants for under- and overestimation.

Abbreviation: CI, confidence interval.

*** $p \leq 0.001$; * $p < 0.05$.

Masters of Public Health Program (MPH), due to time and resource limitation, we could not obtain data for some important variables that could have added extra value to this research. Finally, the study solely employed a quantitative approach to investigate maternal perceptions, whereas employing a mixed-method (both quantitative and qualitative) design could have provided deeper insights into these perceptions. Nevertheless, we consider this study to have contributed novel insights into the factors influencing mothers' differing perceptions regarding the nutritional status of their children under five in urban slum settings. To the best of our knowledge, this is the first study to explore the disparity between mothers' perceptions and the anthropometrically measured nutritional status of their under-five children, along with potential determinants influencing these perceptions in Bangladesh.

5 | CONCLUSION

A higher prevalence (about one in two) of maternal misperception about their under-five child's nutritional status could be hazardous to slum dwellers in terms of nutritional aspects for under-5 years of children. Due to rapid urbanization and demographic changes, the population size of these slums is increasing. Above all, the socio-demographic conditions and water, sanitation and hygiene status of slum make it more vulnerable to malnutrition. Accurate maternal perception of a child's weight status is crucial for a child's nutrition, physical activity and medical care decisions. As mothers frequently misperceive their children's nutritional status, health care professionals should be aware of this issue. Delivering extensive health education for mothers on children's weight status and appropriate feeding practices of children can help the mothers to improve their perception along with other factors such as *access to healthier foods and safe places for physical activity*. Also, anthropometric measurement of under-five children by health care providers irrespective of the reason for consultation can enlighten mothers about their children's nutritional status. Furthermore, research into developing culturally relevant preventative strategies to improve maternal perception should be conducted in Bangladesh's urban slums.

AUTHOR CONTRIBUTIONS

All authors contributed to the design of the study and study tool development. Tanmoy Sarker performed the data collection. Tanmoy Sarker and Sabrina Ahmed carried out the data analysis and interpretation of the results. Tanmoy Sarker wrote the first draft of the manuscript. All authors read and approved the final version of the manuscript.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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REFERENCES

- AlHasan, D. M., Breneman, C. B., Lynes, C. L., & Callahan-Myrick, K. (2018). Factors that influence parental misperception of their child's actual weight status in South Carolina. *Maternal and Child Health Journal*, 22(7), 1077–1084.
- Aparício, G., Cunha, M., Duarte, J., Pereira, A., Bonito, J., & Albuquerque, C. (2013). Nutritional status in preschool children: Current trends of mother's body perception and concerns. *Atención Primaria*, 45, 194–200. [https://doi.org/10.1016/S0212-6567\(13\)70022-2](https://doi.org/10.1016/S0212-6567(13)70022-2)
- Arpini, L. S. B., Barbosa, G. C., Glaacute Justo, F., Salaroli, L. B., & Molina, M. C. B. (2015). Association between maternal perception of children's nutritional status and diet quality of schoolchildren. *Demetra: Food, Nutrition & Health*, 10(2), 299–315.
- Baughcum, A. E., Chamberlin, L. A., Deeks, C. M., Powers, S. W., & Whitaker, R. C. (2000). Maternal perceptions of overweight preschool children. *Pediatrics*, 106(6), 1380–1386. <https://doi.org/10.1542/peds.106.6.1380>
- Binkin, N., Spinelli, A., Baglio, G., & Lamberti, A. (2013). What is common becomes normal: The effect of obesity prevalence on maternal perception. *Nutrition, Metabolism, and Cardiovascular Diseases*, 23(5), 410–416.
- Birch, L. L., Fisher, J. O., Grimm-Thomas, K., Markey, C. N., Sawyer, R., & Johnson, S. L. (2001). Confirmatory factor analysis of the child feeding questionnaire: A measure of parental attitudes, beliefs and practices about child feeding and obesity proneness. *Appetite*, 36(3), 201–210. <https://doi.org/10.1006/appe.2001.0398>
- Blanchet, R., Kengneson, C.-C., Bodnaruc, A. M., Gunter, A., & Giroux, I. (2019). Factors influencing parents' and children's misperception of children's weight status: A systematic review of current research. *Current Obesity Reports*, 8, 373–412.
- Campbell, M. W.-C., Williams, J., Hampton, A., & Wake, M. (2006). Maternal concern and perceptions of overweight in Australian preschool-aged children. *Medical Journal of Australia*, 184(6), 274–277.
- Chen, S., Binns, C. W., Maycock, B., Zhao, Y., & Liu, Y. (2014). Chinese mothers' perceptions of their child's weight and obesity status. *Asia Pacific Journal of Clinical Nutrition*, 23(3), 452–458. <https://doi.org/10.6133/apjcn.2014.23.3.14>
- Concern Worldwide. (2022, October 10). *Integrated SMART Nutrition Survey in Dhaka Urban Slums Bangladesh*. Concern Worldwide. <https://www.concern.net/knowledge-hub/Integrated-SMART-Nutrition-Survey-Dhaka-Urban-Slums-Bangladesh>
- Costa, A., Hetherington, M. M., & Oliveira, A. (2022). Maternal perception, concern and dissatisfaction with child weight and their association with feeding practices in the generation XXI birth cohort. *British*

- Journal of Nutrition*, 127(7), 1106–1116. <https://doi.org/10.1017/S0007114521001653>
- Crocker, H., Sweetman, C., & Cooke, L. (2009). Mothers' views on portion sizes for children. *Journal of Human Nutrition and Dietetics*, 22(5), 437–443. <https://doi.org/10.1111/j.1365-277X.2009.00969.x>
- Eckstein, K. C., Mikhail, L. M., Ariza, A. J., Thomson, J. S., Millard, S. C., & Binns, H. J. (2006). Parents' perceptions of their child's weight and health. *Pediatrics*, 117(3), 681–690.
- Eli, K., Howell, K., Fisher, P. A., & Nowicka, P. (2014). "A little on the heavy side": A qualitative analysis of parents' and grandparents' perceptions of preschoolers' body weights. *BMJ Open*, 4(12), 006609.
- Fakir, A. M. S., & Khan, M. W. R. (2015). Determinants of malnutrition among urban slum children in Bangladesh. *Health Economics Review*, 5(1), 22. <https://doi.org/10.1186/s13561-015-0059-1>
- Francescato, C., Santos, N. S., Coutinho, V. F., & Costa, R. F. (2014). Mothers' perceptions about the nutritional status of their overweight children: A systematic review. *Jornal de Pediatria*, 90(4), 332–343. <https://doi.org/10.1016/j.jped.2014.01.009>
- Francis, L. A., Hofer, S. M., & Birch, L. L. (2001). Predictors of maternal child-feeding style: Maternal and child characteristics. *Appetite*, 37(3), 231–243.
- Genovesi, S., Giussani, M., Faini, A., Vigorita, F., Pieruzzi, F., Grazia Strepparava, M., Stella, A., & Grazia Valsecchi, M. (2005). Maternal perception of excess weight in children: A survey conducted by paediatricians in the province of Milan. *Acta Paediatrica*, 94(6), 747–752. <https://doi.org/10.1111/j.1651-2227.2005.tb01975.x>
- Gorlick, J. C., Gorman, C. V., Weeks, H. M., Pearlman, A. T., Schvey, N. A., & Bauer, K. W. (2021). "I feel like less of a mom": Experiences of weight stigma by association among mothers of children with overweight and obesity. *Childhood Obesity*, 17(1), 68–75.
- Grimmett, C., Crocker, H., Carnell, S., & Wardle, J. (2008). Telling parents their child's weight status: Psychological impact of a weight-screening program. *Pediatrics*, 122(3), e682–e688.
- Guevara-Cruz, M. (2012). Asociación entre la percepción materna y el estado nutricional real de los niños en un grupo de estudio en México. *Nutrición Hospitalaria*, 1, 209–212. <https://doi.org/10.3305/nh.2012.27.1.5411>
- Hackett, K. M., Mukta, U. S., Jalal, C. S., & Sellen, D. W. (2015). Knowledge, attitudes and perceptions on infant and young child nutrition and feeding among adolescent girls and young mothers in rural Bangladesh. *Maternal & Child Nutrition*, 11(2), 173–189. <https://doi.org/10.1111/mcn.12007>
- Hasan, M. Z., Hasan, A. M. R., Rabbani, M. G., Selim, M. A., & Mahmood, S. S. (2022). Knowledge, attitude, and practice of Bangladeshi urban slum dwellers towards COVID-19 transmission-prevention: A cross-sectional study. *PLOS Global Public Health*, 2(9), e0001017. <https://doi.org/10.1371/journal.pgph.0001017>
- Hazhin, T. (2021). *Parents' Perception of Their Preschool Children's Weight Status and Diet Quality: How Accurate It Is?*. Seton Hall University.
- Hochdorn, A., Faleiros, V. P., Camargo, B. V., Bousfield, A. B., Wachelke, J. F., Quintão, I. P., Azzolina, D., & Gregori, D. (2018). Obese children are thin in parents' eyes: A psychologically, socially, or culturally driven bias? *Journal of Health Psychology*, 23(1), 114–126. <https://doi.org/10.1177/1359105316676328>
- Hong, S. A., Peltzer, K., & Jalayondeja, C. (2019). Parental misperception of child's weight and related factors within family norms. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity*, 24, 557–564.
- Hossain, M., Siddiquee, M., Ferdous, S., Faruki, M., Jahan, R., Shahik, S., Raheem, E., & Okely, A. (2019). Is childhood overweight/obesity perceived as a health problem by mothers of preschool aged children in Bangladesh? A community level cross-sectional study. *International Journal of Environmental Research and Public Health*, 16(2), 202.
- Hossain, M. S., Ferdous, S., Raheem, E., & Siddiquee, M. H. (2020). The double burden of malnutrition—Further perspective. *The Lancet*, 396(10254), 813–814.
- Katz, D. L. (2015). Oblivobesity: Looking over the overweight that parents keep overlooking. *Childhood Obesity*, 11(3), 225–226.
- Kerzner, B., Milano, K., MacLean, Jr., W. C., Berall, G., Stuart, S., & Chatoor, I. (2015). A practical approach to classifying and managing feeding difficulties. *Pediatrics*, 135(2), 344–353. <https://doi.org/10.1542/peds.2014-1630>
- Kroke, A., Strathmann, S., & Günther, A. L. B. (2006). Maternal perceptions of her child's body weight in infancy and early childhood and their relation to body weight status at age 7. *European Journal of Pediatrics*, 165(12), 875–883. <https://doi.org/10.1007/s00431-006-0191-3>
- Lindsay, A. C., Sussner, K. M., Greaney, M. L., & Peterson, K. E. (2011). Latina mothers' beliefs and practices related to weight status, feeding, and the development of child overweight. *Public Health Nursing*, 28(2), 107–118.
- Lundahl, A., Kidwell, K. M., & Nelson, T. D. (2014). Parental underestimates of child weight: A meta-analysis. *Pediatrics*, 133(3), e689–e703.
- Maynard, L. M., Galuska, D. A., Blanck, H. M., & Serdula, M. K. (2003). Maternal perceptions of weight status of children. *Pediatrics*, 111(Supplement_1), 1226–1231. <https://doi.org/10.1542/peds.111.S1.1226>
- Moore, L. C., Harris, C. V., & Bradlyn, A. S. (2012). Exploring the relationship between parental concern and the management of childhood obesity. *Maternal and Child Health Journal*, 16(4), 902–908. <https://doi.org/10.1007/s10995-011-0813-x>
- Neli, W., Latif, F. L. A., Rompas, H., Putri, A. H., & Firman, L. O. M. (2021). Indonesian mothers' perception about the children nutritional status and its related factors. *Public Health of Indonesia*, 7(3), 126–132.
- Ng, S. W., Zaghoul, S., Ali, H. I., Harrison, G., & Popkin, B. M. (2011). The prevalence and trends of overweight, obesity and nutrition-related non-communicable diseases in the Arabian Gulf States. *Obesity Reviews*, 12(1), 1–13.
- NIPORT & ICF. (2023). *Bangladesh Demographic and Health Survey 2022: Key Indicators Report*.
- De La O, A., Jordan, K. C., Ortiz, K., Moyer-Mileur, L. J., Stoddard, G., Friedrichs, M., Cox, R., Carlson, E. C., Heap, E., & Mihalopoulos, N. L. (2009). Do parents accurately perceive their child's weight status? *Journal of Pediatric Health Care*, 23(4), 216–221. <https://doi.org/10.1016/j.pedhc.2007.12.014>
- Parkinson, K. N., Reilly, J. J., Basterfield, L., Reilly, J. K., Janssen, X., Jones, A. R., Cutler, L. R., Le Couteur, A., & Adamson, A. J. (2017). Mothers' perceptions of child weight status and the subsequent weight gain of their children: A population-based longitudinal study. *International Journal of Obesity*, 41(5), 801–806.
- Pedroso, J., Toral, N., & Gubert, M. B. (2017). Maternal perception of children's nutritional status in the Federal District, Brazil. *PLoS One*, 12(4), e0176344. <https://doi.org/10.1371/journal.pone.0176344>
- Uzma, A., Underwood, P., Atkinson, D., & Thackrah, R. (1999). Postpartum health in a Dhaka slum. *Social Science & Medicine*, 48(3), 313–320.
- Wald, E. R., Ewing, L. J., Cluss, P., Goldstrohm, S., Cipriani, L., Colborn, D. K., & Weissfeld, L. (2007). Parental perception of children's weight in a paediatric primary care setting. *Child: Care, Health and Development*, 33(6), 738–743. <https://doi.org/10.1111/j.1365-2214.2007.00753.x>
- Warkentin, S., Mais, L. A., Latorre, M. R. D. O., Carnell, S., & Taddei, J. A. A. C. (2018). Factors associated with parental underestimation of child's weight status. *Jornal de Pediatria*, 94, 162–169.
- Webber, L., Cooke, L., Hill, C., & Wardle, J. (2010). Child adiposity and maternal feeding practices: A longitudinal analysis. *The American Journal of Clinical Nutrition*, 92(6), 1423–1428.

- WHO. (2008). WHO child growth standards: Training course on child growth assessment, *Cours de formation sur l'évaluation de la croissance de l'enfant: normes OMS de croissance de l'enfant* (p. 10).
- WHO. (2020). *Levels and trends in child malnutrition*. UNICEF.
- WHO. (2023). Levels and trends in child malnutrition: UNICEF/WHO/World Bank Group joint child malnutrition estimates: Key findings of the 2023 edition. In *Levels and trends in child malnutrition: UNICEF/WHO/World Bank Group joint child malnutrition estimates: Key findings of the 2023 edition*.
- WHO, U. (2014). *Global nutrition targets 2025: Policy brief series (WHO/NMH/NHD/14.2)*. World Health Organization.
- Williams, Y. (2018). What is perception in psychology?—Definition & theory. 15 March 2018.
- Xiang, C., Zhang, Y., Yong, C., Xi, Y., Huo, J., Zou, H., Liang, J., Jiang, Z., & Lin, Q. (2021). Association between parents' perceptions of

preschool children's weight, feeding practices and children's dietary patterns: A cross-sectional study in China. *Nutrients*, 13(11), 3767. <https://doi.org/10.3390/nu13113767>

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