

Original Article

The influence of primary caregivers on body size and self-body image of preschool children in Taiwan

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OBJECTIVE: The purpose of this study was to investigate preschool children's body size and image, and analyze the impact of the primary caregiver on a child's body size and awareness in Taiwan. **METHODS:** In a cross-sectional survey, 699 preschool children and their primary caregivers participated in this study. Our study used an anonymous self-administered questionnaire, which was divided into parts A and part B. Part A was a questionnaire for the primary caregivers, including their demographic and anthropometric information, and expectation for children's body size. Part B was a two part questionnaire for children, including the children's expectation on their own body size and their consciousness in terms of body size evaluation by parents and teachers. Data was analyzed by chi-square analysis. **RESULTS:** In our study, the majority of boys and girls have a normal body size (69.0% and 64.6%, respectively). There was a significant positive correlation ($p < 0.05$) between children and primary caregivers' body size, and a negative correlation ($p < 0.05$) between children body size and caregivers' education level. Furthermore, we found that caregiver's satisfaction and evaluation of the children's body size had significantly affected the children's satisfaction towards their body size. **CONCLUSION:** Influences by the primary caregiver is an important factor that affects a preschool child's body size and body image in Taiwan. Body size evaluation by caregivers will influence the child's satisfaction level.

Key Words: preschool children, body image, body size, caregivers, satisfaction of body size

INTRODUCTION

The excessive pursuit of perfect beauty in modern society nowadays, in addition to the mass media's influence, have formed the aesthetics of "slimness equals beauty" in the eye of the public. This results in blind pursuit of a leaner body without considering the need for it. Obese people are being teased more often and associated with negative qualities, which compounds the misperception of thinness and beauty. Most of the previous studies conducted on body image focused on older adolescents. However, research found that the age group at which one is concerned with weight was shifting to an even younger group. Children are in fear of being discriminated upon due to the inappropriate concern of body weight in early childhood. A study showed that 35% of boys and 38% of girls at age 9 and 10 selected ideal figures that were smaller than their Real Figures on the BMI.¹ Another report from Germany found that 35% of girls and 18% boys have attempted to lose weight.² Strikingly, more than half of the children between the ages of 8 and 9 are dissatisfied with their body weight.³

Body image is actually assembled from multidimensional views and concepts, being readily influenced by various factors such as personal characteristics, family, culture and society. The impact of family in forming the child's perception, attitude and behavior on this issue is the primary concern as it is the first contact for the children with the external environment. A majority of the

parents showed little obvious concern for their children's body size during the stage of early childhood. However, their dissatisfaction gradually increase when the children gets older.^{4,5} The study by Zaliah in Malaysia reported that parents hope that their daughters had smaller body size in comparison with their sons in terms of ideal and healthy body size. Also, the ideal body size that parents desired children to have is significantly smaller than the healthy body size, regardless of gender. A majority of the parents point out that body size plays an important role in the future of children's health, self-ability, social life and career.⁶ The influence of parents in the development of children's body size and image is readily observed as the dissatisfaction rate towards body size among children increases every year. Parents may also contribute to the pathology of body size dissatisfaction in children.

Studies on body size dissatisfaction showed that the trend is moving towards a younger age. However, the studies in Taiwan primarily focused on adolescent and adult groups,⁷⁻¹⁴ while the studies on younger children are

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fewer in number. A study of children's body image between the ages of 3 and 15 in China indicated that the ideal body size chosen by children of a younger age is thinner than that of the ones chosen by adolescents.¹⁵ Davison *et al.* also found a significant correlation between BMI and body dissatisfaction in children of ages 5 to 9. Moreover, a study by Gualdi-Russo showed that 41.6% of girls and 39.4% of boys among the ages of 5 to 9 desired to be thinner.³ In another investigation, Werner found that among the participants aged from 7 to 18 years, more girls showed a dissatisfaction with large body size and a desire to be smaller than the perceived size than boys.¹⁶ A survey of children from 3 to 5 years old by Tremblay *et al.* showed similar results. They also reported that children from the ages of 3 to 5 years old have begun to have cognitive ability to differentiate between body size and desired body size, especially the phenomena of girls' wanting a slimmer body.¹⁷ Furthermore, the behavior of food restriction was found in girls of ages 6 to 7 in order to achieve a slender body due to peer pressure.¹⁸

Many long-term follow up studies pointed out adverse family relationships appear to be the risk factor for pathological eating disorders and negative body image.^{19,20} Society holds the concept of "slimness equals beauty", resulting in a majority of females to have a strong desire for "slimness" and wanting a slimmer body.²¹ This concept is spread and strengthened via family members and peers. Mass media further influences children, causing many of them to have dissatisfaction with body size and food restriction.^{22,23} What is more, parents serve as the major information providers to children.^{24,25} Studies revealed that parents' criticism on their child's body size and encouragement for weight loss are significantly associated with body dissatisfaction and pathological eating disorders in children.^{19,26,27} The evaluation of body size by primary caregivers will have a great impact on the child's body image, further influencing eating behavior in children.

Hence, we chose children in Taichung and their primary caregivers as the participants in our study, and investigated the children's body size and their body image to determine the relationship between primary caregivers' impact on the children's body size and satisfaction.

METHODS

Study design and sample

Our study recruited public and private kindergarten children from Taichung city. About 600 children were sampled from a total number of 13,893 kindergarten children in Taichung city and the sampling ratio was around 4.3%. In view of the high sample dispersion, our study opted for the method of purposive sampling, where kindergartens with a large number of children were selected from the administration of each district in Taichung, and consent was obtained via telephone contact. Finally, 49 classes from 8 kindergartens participated in this study. The study protocol was approved after review by the Institutional Review Board of Chung Shan Medical University (Taichung City, Taiwan).

Before the study, children pass the inform consent and primary caregiver's questionnaires to the primary caregiver. A total number of 1098 sets of questionnaires were distributed to the children to give to their primary care-

givers, and 712 sets were successfully collected back from the caregivers. The overall response rate was 64.8%. However, the number of valid questionnaires collected was 703 sets after excluding incomplete and fraudulent questionnaires. The questionnaires were collected by the kindergarten teachers who were assisting in the registration of questionnaires number, and assured the pairing of primary caregiver and children questionnaire. The researchers, based on the registration numbers, proceeded to carry out a one on one interviews with the children. Four children had taken sick leave during the period of investigation. The final number of valid questionnaires was 699 sets after a personal interview of the children by the interviewers. All research assistants were trained on survey conduction, question answering, as well as obtaining height and weight measurements. The interview for the children was conducted separately by research assistants according to standardized methods and procedures. The weight and height of the children were measured in collaboration with the kindergarten, within 2 weeks after the questionnaire. To protect participants' privacy, children's height and weight were measured in a private area.

Instrument and data collection

Our study used the anonymous self-administered questionnaire as a research tool. The questionnaire was divided into part A and part B. Part A was a questionnaire for the primary caregivers, asking about their demographic information (e.g. gender, age, education level and family income), anthropometric measures (e.g., height and weight to calculate BMI) and expectation on their children's body size. Part B was a questionnaire for children, including Collins' Figure Drawings (CFD) and children's consciousness in body size evaluation by parents and teachers.

Children's body size was calculated by actual measurements in school, while that of the primary caregivers was through self-administration. Body mass index (BMI) was computed from height (meters) and weight (kilograms) measurements in kg/m². The body size of caregivers was according to the Bureau of Health Promotion, Department of Health, Taiwan, body mass index (BMI) less than 18.5 was defined as underweight, 18.5-24 as normal, between 24 and 27 as overweight, and higher than 27 as obesity. The body size of children was then categorized by following the standards published by the Taiwan Department of Health, which were: underweight, normal weight, overweight and obese.²⁸

CFD is a pictorial instrument consisting of seven pre-adolescent body figures ranging from very thin (scored 1) to obese (scored 7).²⁹ Seven male and female figures of children were created to illustrate body weights ranging from *thin* to *obese*. Children used the CFD same-gender child figure to make selection of self-body shape (*Which picture looks the most like you?*) and ideal body shape (*Which picture shows the way you want to look like?*). For the caregivers, the questions were adapted to "which picture looks the most like your child?" and "which picture shows the way you want your child to look like?". The CFD score was determined by subtracting the value of the self-selection from the value of the ideal-self-selection. Negative scores indicate desires for thinner

body shapes, whereas positive scores indicate desires for heavier body shapes. Our study used CFD to evaluate the satisfaction level of children towards their own body size. In addition, the scale was also used to explore the satisfaction level in the primary caregivers on the children's body size. There are quite a large number of international studies using this scale to evaluate preschool children's body image.³⁰⁻³⁴ It has also been used to evaluate children's body image in Asian countries such as Japan.³⁵

Statistical analysis

SPSS (version 12.01, 2004) was used for data compilation and statistical analysis. The values are represented by mean±SD, with significant difference between the groups if $p < 0.05$. Basic information from the primary caregivers and children, including age, body size, educational level and family monthly income are summarized in the frequency distribution table. The chi-square test analysis was performed to compare the correlation between caregivers' variables (body size, education level, family income) and children's body size. Also, the chi-square test was used to show whether there is a significant correlation between caregiver's exception towards children's body size and children's satisfaction with body size. In order to have higher statistical power with effective sample size, subjects with partial missing values in the questionnaire remained in the analysis if the part being analyzed was completed.

RESULTS

A total of 699 preschool children participated in this study, (323 boys and 376 girls, accounting for 46.2% and 53.8% of the sample, respectively). The age of the participants ranged from 4 to 6 years old, with an average age of 5.12 ± 0.71 years. With regard to type of schools attended by these children, 45.2% attended private schools and 54.8% public schools. The majority of the children were at the age of 5 (48.6%) and 6 (31.5%) years (Table 1).

The average BMI (in kg/m^2) for all the children was 16.2 ± 2.09 (11.8 - 25.4), of which 16.5 ± 2.13 and 15.9 ± 2.02 were observed for boys and girls, respectively. Table 1 shows that the majority of boys and girls have a normal body size (69.0% vs 64.6%). The percentage of underweight children was higher in girls than in boys (12.5% vs 8.7%), while the percentage of girls who were overweight and obese was slightly higher than boys (22.9% vs 22.3%). Further chi-square analysis showed that there was not significantly different between body

size distribution of boys and girls.

A total number of 699 primary caregivers participated in this study, of which 572 were female (81.8%), and 127 were male (18.2%). Of the primary caregivers, 566 were mothers, (81%), 121 were fathers are (17.3%), 10 were grandparents (1.4%), and 2 were aunts (0.3%). The majority of the primary caregivers' education level was above secondary school, accounting for 93.6%. The percentage of caregivers who attended college/university was 49.9%. In addition, the education level of females was significantly higher than that of the males. The majority of them have a monthly family income of about 30,000 to 55,000, accounting for 40.1%.

The average actual BMI for all primary care givers was 21.9 ± 3.08 (16.5 - 33.3), of which males were 24.4 ± 3.15 and females were 21.4 ± 2.82 . With regard to actual body size, 10.1% were underweight, 66.6% were of normal weight and 14.8% were overweight (Table 2). The majority of the female caregivers were either of normal or underweight body size (84.4%). In comparison, most of the male caregivers' body size was distributed in the range of normal (39.3%) or overweight (38.4%). There were fewer male caregivers who were underweight (0.9%) as compared to females (12%). Of the males, 21.5% were considered obese, while only 5.8% of the females were considered obese.

As shown in Table 3, there was a significant positive correlation ($p < 0.05$) between the primary caregivers and children's body size. If the primary caregivers are obese, the possibility for the child to become obese is higher. In addition, we also found that there was a significant negative correlation between the educational level of caregivers and the child's actual body size. However, there was no significant relationship between monthly family income and the child's actual body size.

As indicated in Table 4, when the primary caregivers expected children to be thinner, the lowest percentage (30.7%) of children wanted to keep their current weight. Of these, 58.4% of them wanted their body size to be thinner than self-perceived one. In contrast, if the primary caregivers were satisfied with the current body size of the child, the percentage of children wanting to become thinner was around 39.9%. On the other hand, the number of children who wanted to gain weight was much higher than the other two groups (38.7% vs 22.3% and 10.9%) if the primary caregivers expected their child to have a larger body size.

Table 1. Numbers and percentage of preschool children across ages and body size

Independent variable	Boys (n=323)	Girls (n=376)	Total (n=699)
Age (y)			
4	64 (19.8)	75 (19.9)	139 (19.9)
5	160 (49.5)	180 (47.9)	340 (48.6)
6	99 (30.7)	121 (32.2)	220 (31.5)
Body size			
Underweight	28 (8.7)	47 (12.5)	75 (10.7)
Normal	223 (69.0)	243 (64.6)	466 (66.7)
Overweight	47 (14.6)	53 (14.1)	100 (14.3)
Obese	25 (7.7)	33 (8.8)	58 (8.3)

†The number in the table indicates the number of participants, and the number in parentheses represents percentage.

*Chi-square analysis was used to compare the differences between independent variables of girls and boys. * $p < 0.05$

Table 2. Numbers and percentage of primary caregivers across ages, body size, education level and family incomes

Independent variable	Males	Females	Total
Body size*			
Underweight	1 (0.9)	64 (12.0)	65 (10.1)
Normal	44 (39.3)	385 (72.4)	429 (66.6)
Overweight	43 (38.4)	52 (9.8)	95 (14.8)
Slight obese	18 (16.1)	25 (4.7)	43 (6.7)
Modern obese	6 (5.4)	6 (1.1)	12 (1.9)
Education level *			
Elementary school	0 (0)	3 (0.5)	3 (0.4)
Junior high school	16 (13.1)	24 (4.3)	40 (5.9)
High school	39 (32.0)	236 (42.5)	275 (40.6)
University	63 (51.6)	275 (49.5)	338 (49.9)
Graduate school	4 (3.3)	17 (3.1)	21 (3.1)
Family income (NTD)			
Under 30,000			84 (12.7)
30,000-35,000			266 (40.1)
55,000-80,000			164 (24.7)
Over 80,000			150 (22.5)

†The number in the table indicates the number of participants, and the number in parentheses represents percentage.

*Chi-square analysis was used to compare the differences between independent variables of male and female caregivers

* $p < 0.05$

Table 3. Correlation between preschool children's body size and primary caregiver's body size, education level and family income

Caregivers dependent variable		Children body size				χ^2 Statistic
		Underweight	Normal	Overweight	Obese	
Body size* n=644						0.164
underweight	65 (10.1)	10 (15.4)	45 (69.2)	5 (7.7)	5 (7.7)	
Normal	429 (66.6)	46 (10.7)	301 (70.2)	57 (13.3)	25 (5.8)	
Overweight	95 (14.8)	8 (8.4)	54 (56.8)	20 (21.1)	13 (13.7)	
Obese	55 (8.5)	5 (9.1)	28 (50.9)	12 (21.8)	10 (18.2)	
Education level* n=677						-0.105
Elementary school	43 (6.4)	4 (9.3)	28 (65.1)	7 (16.3)	4 (9.3)	
Junior high school	275 (40.6)	22 (8.0)	179 (65.1)	44 (16.0)	30 (10.9)	
High school	338 (49.9)	43 (12.7)	227 (67.2)	45 (13.3)	23 (6.8)	
University	21 (3.1)	1 (4.8)	19 (90.5)	1 (4.8)	0 (0)	
Family income (NTD) n=664						-0.049
Under 30,000	84 (12.7)	8 (9.5)	51 (60.7)	15 (17.9)	10 (11.9)	
30,000-35,000	266 (40.1)	26 (9.8)	183 (68.8)	36 (13.5)	21 (7.9)	
55,000-80,000	164 (24.7)	16 (9.8)	108 (65.9)	25 (15.2)	15 (9.1)	
Over 80,000	150 (22.6)	18 (12.0)	103 (68.7)	18 (12.0)	11 (7.3)	

†The number in the table indicates the number of participants, and the number in parentheses represents percentage.

*Chi-square analysis was used to compare the correlation between caregivers' independent variables and preschool children body size

* $p < 0.05$

According to the data in table 5, 45.5% of the body size evaluations were conducted by fathers, 50.2% by mothers, and 24.5% by teachers. The percentage of teachers who expected the child's body size to be larger (35.1%) was higher than those who didn't (26.9%). Further analysis by using chi-square tests found that there was a significant correlation between body size evaluation by the teachers and children's body satisfaction ($p < 0.05$).

Table 5 shows that there was a significant difference between various body size evaluation by fathers, mothers and teachers that was affecting children's body satisfaction. The majority of mothers (57.3%), fathers (52.5%) and teachers (43.9%) evaluated children as being too thin (Table 5). The percentage (58.9%) of children who were rated overweight by mother and desire to become thinner

was significantly higher than those who were rated normal (31.9%) or underweight (24.4%). When teachers evaluated children's body size as normal body size, the percentage of children who were satisfied with their current weight was 52.9%, which was higher than those who were evaluated as overweight (21.4%) or too thin (33.3%). Conversely, of the children who were evaluated as overweight by their teachers, about 60.7% want to be thinner (Table 5).

DISCUSSION

In our study, the overweight and obese children accounted for 22.6% (Table 1). According to the comparison of a few recently conducted studies, we found that the percentage of overweight preschool children was lower in Taiwan than in other countries.³⁶⁻³⁷ A study on preschool

Table 4. Correlation between children's and primary caregivers' satisfaction with preschool children's body size

Caregiver's dependent Variable	Preschool children's body satisfaction			
	Total	Hope to be thinner	Keep current weight	Hope to be fatter
Caregiver's satisfaction with children's body ^{***}				
Hopes child is thinner	101 (14.7)	59 (58.4)	31 (30.7)	11 (10.9)
Hopes child keeps current weight	233 (34.0)	93 (39.9)	88 (37.8)	52 (22.3)
Hopes child is fatter	351 (51.2)	85 (24.2)	130 (37.0)	136 (38.7)

†The number in the table indicates the number of participants, and the number in parentheses represents percentage.

*Both children and caregiver's Satisfaction with children's body was evaluated by Collins' Figure Drawings CFD

§Chi-square analysis was used to compare the difference of satisfaction with body size among caregivers' satisfaction with children.

*** $p < 0.000$, * $p < 0.05$

Table 5. Comparison of preschool children's body satisfaction among different body evaluation by primary caregivers

Children's consciousness in body evaluation by parents and teacher	Total	satisfaction with body size of preschool children		
		Hope to be thinner	Keep current weight	Hope to be fatter
If caregiver evaluate children's body size	n=699			
Father				
No	381 (54.5)	137 (36.0)	145 (38.1)	99 (26.0)
Yes	318 (45.5)	105 (33.0)	110 (34.6)	103 (32.4)
Mother				
No	348 (49.8)	130 (37.4)	127 (36.5)	91 (26.1)
Yes	351 (50.2)	112 (31.9)	128 (36.5)	111 (31.6)
Teachers*				
No	528 (75.5)	198 (37.5)	188 (35.6)	142 (26.9)
Yes	171 (24.5)	44 (25.7)	67 (39.2)	60 (35.1)
If yes, how do caregivers evaluate your body size?				
Father told me that I am ^{***} (n=318)				
Normal	96 (30.2)	34 (35.4)	38 (39.6)	24 (25.0)
Too fat	55 (17.3)	35 (63.6)	11 (20.0)	9 (16.4)
Too thin	167 (52.5)	36 (21.6)	61 (36.5)	70 (41.9)
Mother told me that I am ^{***} (n=351)				
Normal	94 (26.8)	30 (31.9)	46 (48.9)	18 (19.1)
Too fat	56 (16.0)	33 (58.9)	14 (25.0)	9 (16.1)
Too thin	201 (57.3)	49 (24.4)	68 (33.8)	84 (41.8)
Teacher told me that I am ^{***} (n=171)				
Normal	68 (39.8)	16 (23.5)	36 (52.9)	16 (23.5)
Too fat	28 (16.4)	17 (60.7)	6 (21.4)	5 (17.9)
Too thin	75 (43.9)	11 (14.7)	25 (33.3)	39 (52.0)

†The number in the table indicates the number of participants, and the number in parentheses represents percentage.

*Children's body Satisfaction was evaluated by Collins' Figure Drawings CFD

§Chi-square analysis was used to compare the different of satisfaction with body size among different evaluation from caregivers.

*** $p < 0.000$, * $p < 0.05$

children's body size in Taiwan by Chang et al. showed similar results to our findings.³⁸ There is the same trend in growth of children's body size observed in Taiwan and other foreign countries. A study pointed out that about one third of overweight children have the tendency to become obese in adulthood.³⁹

In our study, we found that there was a significant positive correlation between the size of the primary caregivers and the size of the child (Table 3). A study showed that the phenomena of obese and overweight children were significantly related to the parents.⁴⁰ Savva *et al.* suggested that there was a significant relationship between obesity in preschool children and obesity in father (OR=3.24) and mother (OR= 3.9) parents (OR= 3.24; 3.91).⁴¹ Many studies show that obese parents appears to be the primary factor in causing obesity in their preschool children.^{42,43}

Nevertheless, in our study, obesity was not only contributed by parents, but also by primary caregivers. Even though 81.8% of the children's primary caregivers were their mother in our study. But this study implies that the primary caregivers should be considered as an independent impact factor in future research on the influences of family on children's body size.

Our study has found that there was a negative correlation between the educational level of primary caregivers and the body size of children. It showed that primary caregivers with a higher education had a lower incidence rate of obese and overweight children. A study demonstrated that the children of the primary caregivers who had lower educational levels were more obese.⁴⁴ A Germany study also found that there was a negative correlation between the educational level of primary caregivers

and the body size of the child.⁴⁵ Baughcum *et al.* discovered that maternal obesity during maternity was more common among those who have lower educational levels, and their children have the tendency to become overweight.⁴⁶ Our study supports these observation found in the above mentioned studies. However, some previous studies showed otherwise. A study in Pakistan found that there was a significant positive correlation between highly educated parents and overweight and obese school-age children.⁴⁷ In developing countries, the educational level of the parents had a positive correlation with the child's body size.^{48,49} A study in Taiwan also found that the higher the parents' educational level, the higher the rate of childhood obesity in 2005.⁵⁰ Our study was different with the above mentioned studies, probably because of the extensive promotion of Taiwan annual health education in recent years, resulting in increased parental health consciousness and also attitudes towards children's body size had gradually shifted to that similar to Western countries.

In addition, a lot of studies discovered that socio-economic status is an important factor in affecting the body size of the children.⁵¹⁻⁵³ The findings from a study by Dubois & Girard suggest that children from a low monthly income family are at 2.5 times higher risk of become overweight than children from a high monthly income family.⁵⁴ A study in the United States showed that a great number of children from low income families were obese or overweight.⁵⁵ However, several studies found that socio-economic status did not affect the body size of children.^{36,56} The results of our study also showed that the monthly family income was not significantly related to children's body size. There is no consistency among those studies, probably because the treasured ideal of slimness has percolated through all levels of society via the media. Therefore whether the monthly family incomes is an important factor that affected children's body size still need further investigation.

According to our results in Table 4, we found that primary caregiver's satisfaction with children's body size was significantly related to children's body satisfaction. When the primary caregivers were content with their child's body size, the percentage of children who were satisfied with their body size was relatively high. Whereas the percentage of the children who desired to increase their weight or to become slimmer were relatively higher when their primary caregivers wanted their child to have a larger or slimmer body size. Some of studies also support our findings. For example, a study pointed out that even when the children was only four years old, mothers would begin to show concern about their daughters' weight and muscle development of their sons, and therefore such concerns would influence the child's body image and eating behavior.⁵⁷ Another study suggested that the verbal expressions of a mother towards her son asking him "to be stronger" would be an important factor in predicting the self-perception of the son's body size.⁵⁸ Lowes and Tiggemann used multiple regression analysis in their study and found that the dissatisfaction level of the body size in a mother could predict the child's dissatisfaction level too.⁵⁹ It indicated further proof that primary caregivers could pass their own concepts of body

size to their children through daily communication, body language and other types of interaction.

In recent years, the number of working women has increased, therefore, the need of childcare services had also increased. Thus, the caretakers in childcare centers (kindergartens, nursery schools, etc.) played an important role in looking after the child's nutritional needs and also affecting the child's eating habits.⁶⁰ However, McCabe *et al.* found that the kindergarten teachers would not be particularly concerned about the change of child's weight, but they would encourage the children to do exercises, and give them some positive comments about their looks instead. However, they also commented that if a mother was particularly concerned about her child's appearance, they would pay more attention to that child, especially if it was a girl.⁵⁷ Our findings were similar with the above mentioned studies. About 24.5% teachers would evaluate children's body size, which percentage was significantly lower than mothers' and fathers' (50.2% and 45.5%). But it would affect a child's body satisfaction when the teacher made an evaluation on his or her body size. According to Table 5, the percentage of children who desired to have a larger body size was higher when their body size had been evaluated by teacher compared to those who had never received any evaluation from their teacher. For those who wanted to become slimmer, the percentage of children whose body size had been evaluated by teachers was lower than those who hadn't been evaluated the teachers. As a result, this study concluded that teachers might be evaluating the body size of children with smaller body size or they might be educating their children about body size with positive ideas.

Table 5 showed that when parents had evaluated their children's body size as normal, the percentage of children who were satisfied with their own body size was significantly higher than children who had been evaluated as overweight or too thin. The percentage of children who desired to become thinner or fatter significantly increased if they were evaluated as overweight or too thin by their parents. The influence of the evaluation of the parents on their child's body size is shown from the satisfaction level of the child. It reflected that body size evaluation by caregivers will influence the child's satisfaction level.

The public concept of body size nowadays had become a serious issue especially among teenagers and young females. This phenomenon was also reflected in this study, as there was a high level of dissatisfaction among the children. It is important for children to eat well and develop a healthy body size, as a distorted concept of body size will negatively affect the health of the child. The body weight and size concept instilled among children will possibly affect their eating behaviors and food choices and further influence their health. Therefore, it is very important to educate children regarding healthy weight.

This study was conducted on children in Taichung city, so the results might be more skewed towards the behavior and mentality of urban life in Taiwan. We suggested that future studies should include an extended sampling range for better understanding about body image, eating behavior and the body size of children throughout Taiwan.

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AUTHOR DISCLOSURES

There is no conflict of interest in this study.

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Original Article

The influence of primary caregivers on body size and self-body image of preschool children in Taiwan

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主要照顧者對台灣學齡前兒童的體型及體型意識的影響

本研究主要目的在調查台灣學齡前兒童的體型和體型意識現況，並探討主要照顧者對幼兒體型及體型意識的影響。本研究為橫斷式調查，共有 699 位學齡前兒童及其主要照顧者參與本研究，以匿名自填式問卷為研究工具，內容包括 A、B 兩部分，A 部分為主要照顧者問卷，內容包括基本資料及對幼兒的體型期待；B 部分為幼兒問卷，內容包括幼兒對自我體型的期待及幼兒對父母和老師對自己體型評價的認知。以卡方檢定來分析統計資料。結果發現，分別有 69.0% 的男幼兒及 64.6% 的女幼兒為正常體型，幼兒的體型與主要照顧者的體型有顯著正相關 ($p < 0.05$)，但與主要照顧者的教育程度有顯著負相關 ($p < 0.05$)。進一步我們也發現主要照顧者對於幼兒的體型滿意度及體型評價會顯著影響幼兒對自己體型的滿意度。主要照顧者為台灣學齡前兒童的體型及體型意識的重要影響因子。

關鍵詞：學齡前兒童、體型意識、體型、照顧者、體型滿意度