

# Parental feeding style among elementary school students in Semarang city

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# Parental Feeding Style among Elementary School Students in Semarang City

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**Abstract.** Semarang City has high prevalence of obese children. The prevalence in the age group of 5-12 years old in 2018 (15.57% overweight and 12.30% obese), higher than the provincial and national prevalence. Children's dietary habits are greatly influenced by parents' role. This study aimed to describe parental feeding style among elementary school students in Semarang City. This was a cross-sectional study using primary data from students and their parents. Data was taken by measuring students' anthropometry and interviewing parents using the PFSQ by Wardle et al. Samples were 355 students and 355 parents from 15 Elementary Schools in Semarang City. There were 51.83% female and 48.17% male students. Students were 9-13 y.o (highest was 10 y.o-54.37%). There were 21.69% students in the category of more than normal (overweight and obese). As much as 45.35% of parents were fat and obese. There were 18.31% parents were applying instrumental feeding, 34.93% parents were applying emotional feeding, 99.44% parents were applying prompting/encouragement to eat, and 56.34% parents were applying control feeding style. Almost all elementary school parents applied prompting/encouragement to eat which is considered as a participatory process of eating that has a better and long-term impact on children's eating habits.

## INTRODUCTION

School children aged 6-12 years are nutritionally vulnerable groups that are most susceptible to nutritional disorders. Children nowadays are experiencing double nutritional problems (double burden), that are malnutrition and excess nutrition. In the world, obesity affects 41 million children and adolescents, which is considered a global endemic problem [1]. Based on data from the 2010 Basic National Health Research (Riskesdas), the prevalence of nutritional status (BMI/U indicator) of children aged 6-12 years in the category of severely underweight 4.6%, underweight 7.6%, normal 78.6% and obese 9.2% [2]. Meanwhile, based on 2013 Riskesdas data, the prevalence of children aged 5-12 years in the overweight category reached 18% consisting of 10% overweight and 8% obese [3]. Based on Riskesdas 2018, the prevalence of overweight children was 10.8%, and obese children was 9.2% [4]. This indicates an increase in the incidence of overweight and obesity in school-age children (5-12 years).

School-aged children need 5 groups of nutrients (carbohydrates, protein, fat, vitamins, and minerals) in sufficient quantities, not excessive and nor deficient. Balanced nutrition is needed to be given to children especially school-aged children. It is a dietary daily habit that contains nutrients in the type and amount according to the body's needs. The principles of balanced nutrition is including diversity or variety of food, workout and physical activity, the cleanliness, and body weight according to body height. In general, the composition of a balanced diet is when the energy composition of carbohydrates is 50-65%, protein 10-20%, and fat 20-30%. Sugar consumption should be limited to 5% of the amount of energy adequacy or about 3-4 tablespoons per day [5].

Being overweight and obese is caused by not following a balanced nutritional pattern, including overeating, too high sugar consumption, eating too much fatty food, not exercising, and lack of physical activity [6]. Obesity can cause a weaker body condition that leads to easily getting sick, easily tired, and easily sleepy. If obesity happened in

long term, it can increase the risk of heart disease, diabetes, stroke, high blood pressure, and others. Basic Health Research in 2018 data showed that the prevalence of Diabetes Mellitus at the age of <15 years in Indonesia is 0.014%. And the prevalence of Diabetes Mellitus at school age based on a doctor's diagnosis is 0.1% [4].

Obesity in childhood will increase the risk of obesity in adulthood. The causes of obesity are considered as 'multicausal' and very multidimensional because they do not only occur in high socioeconomic groups but also often occur in middle to lower socioeconomic groups. Environmental factors affect more on obesity rather than genetic factors. Obese children usually come from families who are also obese [7].

In Semarang City, the prevalence of obesity was 10.6% in 2009. Meanwhile, in 2013, the prevalence of nutritional status aged 5-12 years in Semarang was 2.8% severely underweight, 7.8% underweight, 65% normal, 9.7% overweight, and 14.7% obese. In this case, Semarang is in third place with the highest prevalence of obesity in children aged 5-12 years in Central Java Province [8]. In 2018, the overweight prevalence among children under five in Semarang was 5.84%, the second-highest in Central Java Province. The prevalence was even higher in the age group of 5-12 years old in 2018 (15.57% overweight and 12.30% obese), which was higher than the provincial and national prevalence [9].

Children's eating patterns are strongly influenced by the role of parents in shaping children's eating habits [10]. Other study showed that parents' feeding style plays a direct role to children's eating pattern [11]. Parents can encouraged healthy eating habits by increasing the family meals, provide healthy foods, and reducing the availability of sugar-sweetened beverages including soda [12]. The behavior of giving foods that contain lots of sugar and are high in carbohydrates has been shown to result in excessive child weight gain [13]. Semarang City was in the third place with the highest prevalence of obesity among school-aged children Central Java Province. Therefore, this study aimed to determine parental feeding style for elementary school-aged children in Semarang. The results of this study were expected to obtain data on parenting patterns related to elementary school-age children feeding style in Semarang.

## METHOD

This was a cross-sectional study to Elementary School in Semarang City in June to August 2019. The population was parents of Elementary School students in Semarang City. Sampling method was using simple random sampling. First of all, 15 elementary schools were chosen using simple random sampling method using secondary data from the Education Department of Semarang City. Eight schools were public schools and seven schools were private schools. It was decided that only the fifth grader who would involve in this study due to many considerations. The fifth grader on each school has about 25 students. Therefore, there were 366 students from 15 Elementary Schools involved in this study. The students' data was taken by measuring students' body weight and body height. Parents' data was taken by interviewing parents using a questionnaire. The questionnaire was adapted from the PFSQ (Parental Feeding Style Questionnaire) Wardle et al. [14]. This questionnaire was originally in English, therefore it was translated into Bahasa Indonesia first. Parents submitted inform consent forms to participate in this study and to be fully consent that their children's data were also taken. There were 366 parents involved in this study, however after the cleaning and reduction process, there were 355 data that could be analyzed. Data was analyzed using univariate and bivariate analysis.

## RESULT AND DISCUSSION

### Characteristics

This study specified that the subjects were from the fifth grader only, in order to minimize any disturbance variables outside the researched variable. However, the result showed that the students' subjects' age was ranging from 9 to 13 years old. More than half of them were 10 years old (54.37%). Most of the students' subjects were female (51.83%) and having normal BMI (78.31%). However, as much as 21.69% of them were having higher-than-normal BMI or determined as overweight and obese.

**TABLE 1.** Characteristics

Characteristics	n	%
Students' Age		
9	28	7.89%
10	193	54.37%
11	119	33.52%
12	10	2.82%
13	5	1.41%
Students' Sex		
Male	171	48.17%
Female	184	51.83%
Students' BMI		
Normal	278	78.31%
Overweight	57	16.06%
Obese	20	5.63%
Parents		
Mother	286	80.56%
Father	69	19.44%
Parents' Education		
Lower Education	240	67.61%
Higher Education	115	32.39%
Parents' BMI		
Underweight	13	3.66%
Normal	181	50.99%
Overweight	71	20.00%
Obese	90	25.35%

As shown in table 1, most of parents' subjects were female and as the students' mothers (80.56%). As much as 67.61% (240 subjects) were having lower education. The category of lower education means subjects' last education were Elementary School, Junior High School, and Senior High School. However, the most education of subjects was graduated from Senior High School (45.35%). The highest percentage of parents' BMI were normal (50.99%). However, almost half of parents' BMI were more than normal (20.00% overweight and 25.35% obese).

### Parental Feeding Style

This study found that almost all subjects were applying prompting and encouraging feeding style (99.44%). More than half of subjects were applying control over eating feeding style (56.34%). Table 2 shows that as much as 34.93% parents were applying emotional feeding style, and 18.31% were applying instrumental feeding style. As shown in table 3, the proportion of students' higher-than-normal BMI with instrumental feeding was the highest (32.3%) among other feeding style. While the smallest proportion of students' Normal BMI was with instrumental feeding style (67.7%). Table 3 also shows the result of bivariate analysis using chi square test. It shows that higher-than-normal BMI (overweight and obese) is related to instrumental feeding style (p-value 0.031), prompting and encouraging feeding style (p-value 0.001), and control over eating feeding style (p-value 0.001).

**TABLE 2.** Parental Feeding Style

Categories	Frequency	Percentage (%)
Emotional	124	34.93%
Instrumental	65	18.31%
Prompting and encouraging	353	99.44%
Control over eating	200	56.34%

**TABLE 3.** Frequency Distribution and Correlation of Students' Higher-than-Normal BMI on Parental Feeding Style

Variables	BMI				p
	Higher-than-Normal		Normal		
	n	%	n	%	
Emotional	32	25.8	92	74.2	0.238
Instrumental	21	32.3	44	67.7	0.031
Prompting and encouraging	79	22.4	274	77.6	0.001
Control over eating	46	23.0	154	77.0	0.001
<b>Total</b>	<b>77</b>	<b>21.7</b>	<b>278</b>	<b>78.3</b>	

## Discussion

Based on Riskesdas 2018, the national proportion of children (5-12) overweight and obese were 20.0%. The proportion in Central Java Province was not much different (20.2%) compared to the national proportion [4], [9]. This study found that the proportion of higher-than-normal BMI (overweight and obese) among students was 21.69%, which was higher than the national and provincial proportion. Overweight in childhood are more likely develop to be obese in adulthood [15], [16]. Obesity can cause many negative impacts such as metabolic impact, stroke, heart attack, cancer, osteoarthritis gout, and many more. Those negative impacts could continue to increase if obesity persists for a long time [6].

This study showed as much as 67.61% of parents had lower educational background. Other studies suggest that lower paternal education directly associated to children's higher-than-normal BMI [16]–[18]. Even one study using path analysis suggests that parents with low educational background was one of the strongest determinants of children overweight [19].

This study found that parents' BMI were also alarming. Almost half of the parents' subject were having higher-than-normal BMI (45.35%). This percentage was also higher than the national proportion, which was 35.4% in 2018 [4]. One study using path analysis suggests that parental BMI was one of the strongest determinants of children overweight, which means children with overweight parent had increased risk of being overweight compared with children with lean parents [19]. Other study found that children with one obese parent were more frequently overweight than children with one overweight parent [20]. This means the higher the parents' BMI could increase the chance of children with overweight. We found that the proportion of overweight parents' subject were 20.0%, while obese parents were 25.35%. The proportion of obese parents were higher than overweight parents. Those categories were also above the national proportion. The national proportion of overweight among adults were 13.6% and 21.8% obese adults in 2018 [4]. Overweight parents is an important risk factor for children's overweight and obesity [18]. When both parents are overweight, the greater the risk of children getting overweight as well [15], [16]. Other study suggests that the impact of parental BMI on the severity of obesity in children is strengthened as the child grows into adolescence [21]. Therefore, intervention among children with higher-than-normal BMI need to be implemented as soon as possible to prevent any negative impacts before they grow into adolescence. This intervention needs to be followed by parents as they are the one who feed the children and form children's eating habit.

The way parents feed their children contributes to children's eating habit [12]. Wardle et al. developed four aspects of feeding style, they are emotional feeding, instrumental feeding, prompting/encouragement to eat, and control over eating. Emotional feeding is determined as using food to control child's emotion, for example giving a child food to make him feel better when he is sad. Instrumental feeding means using food as a reward, for example giving a child food when he is well-behaved. Prompting/encouragement to eat determined as encouraging children to eat any kinds of food, for example praising a child when he eats what parents give him. Control over eating means controlling what and when to eat, for example parents decide how many food their child should have [14], [16].

This study found that three out of four aspects of parental feeding styles were associated to students' BMI. The first was instrumental feeding style (p-value 0.031). Other study suggests that instrumental feeding were also positively related to children's snacking behaviour [22]. However, two other studies suggest that instrumental feeding were negatively related to child fruit intake and positively related to the energy-dense snack intake [23], [24].

This study found that almost all parents applied prompting and encouragement feeding style (99.44%). It was also associated to students' BMI (p-value 0.001). Some research suggest that encouragement to eat was associated and may lead to less energy-dense snacking and less sugar-sweetened beverage intake including more frequent consumption of fruits, vegetables, dairy products and breakfast [23], [24]. However, other study found that encouragement to eat was negatively associated with children's snacking behaviour [22].

Control over eating feeding style was associated with students BMI (p-value 0.001). There were 56.34% parents who applied control over eating. Some studies found that parental control over child feeding were not associated with child energy intake or weight status [22], [25]. Parents who control and restrict some food to their children sometimes believe that it was the best for their children. However, some studies found that imposing stringent controls can increase preferences to high-fat foods and energy-dense foods [12], [26]. However, another study found that control over eating correlated with more frequent consumption of fruits, vegetables and breakfast, and less consumption of dairy products and high-energy-density food [24].

This study found as much as 34.93% parents were applying emotional feeding. However, emotional feeding has no association to students' BMI. Other research found that emotional feeding was negatively related to child fruit intake and positively related to child energy-dense snack intake [23]. It was also found to related to inadequate consumption of fruit, vegetables and breakfast, and positively correlated with intake of high-energy-density food [24].

As some studies suggest that parental feeding style directly affect students' eating behavior [22], [24], [27] which then may lead to higher-than-normal BMI, therefore some interventions need to be implemented as soon as possible. The interventions must target parents' understanding and practices in children feeding style. Parents' education through community empowerment will be a good choice since the sustainability could last. One best practice was parents' education through Posyandu (Integrated Healthcare Center) to frequently educate community about mother and child health.

## CONCLUSION

This study concludes that almost all elementary school parents applied prompting/encouragement to eat feeding style. This feeding style is considered as a participatory process rather than a repressive process of eating that has a better and long-term impact on children's eating habits. Educating parents on good feeding styles will have great benefits to children's eating habit and their future health as well.

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