
Usia, Status Gizi, dan Berat Badan Anak Sebagai Faktor Determinan dalam Estimasi Porsi Makan oleh Ibu

Age, Nutritional Status, and Body Weight of Children as Determinant Factors Of Children's Portion Size Estimation By Mother

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Abstrak

Sekitar 50% ibu menyediakan makan Balita belum sesuai porsinya. Tujuan penelitian ini menganalisis faktor-faktor determinan estimasi porsi makan Balita oleh ibu. Penelitian *cross-sectional* ini melibatkan 82 ibu-Balita dari 5 Posyandu di kota Yogyakarta. Estimasi porsi oleh ibu dieksplorasi dengan kuesioner gambar makanan berskala. Ibu cenderung *over-estimate* sumber karbohidrat dan sayuran, serta *under-estimate* sumber protein hewani, protein nabati, dan buah. Ada hubungan signifikan antara usia balita dan berat badan dengan estimasi porsi makan. Persepsi ibu dalam estimasi porsi Balita berdasarkan pada usia dan berat badan balita. Penelitian lebih lanjut diperlukan untuk mengeksplorasi pengetahuan dan praktik ukuran porsi yang sesuai untuk Balita.

Kata kunci: umur; status gizi; berat badan; porsi balita

Abstract

Many mothers provide food portion to toddlers inappropriately. This study analyzed the determinants of the toddler's portion size estimation by the mother. This cross-sectional study involved 82 mother-toddler participants from 5 Posyandu in the Yogyakarta city. Mother's estimation was explored with a scaled food pictures questionnaire. Toddler's age, body weight, and height/length were collected while Posyandu.. Most of mother tend to over-estimated of carbohydrate sources and vegetables, also under-estimated of animal and plant protein sources, and fruits. There was a significant relationship about toddler's age and body weight with portion size estimation. Mother's perception of portion size was determined by the toddler's age and body weight. Further studies are needed to explore the knowledge and practices of appropriate portion size for toddler regarding their feeding practices.

Keywords: age; nutritional status; weight; portion children

BACKGROUND

Based on the World Health Organization (WHO) problem criteria (Onis et al., 2018), in the 0-59 age group, Yogyakarta province has acute nutritional problems (Kulon Progo and Yogyakarta City) as well as acute-chronic (Bantul and Gunung Kidul). While in the city of Yogyakarta, the nutritional problem found according to WHO is the moderate prevalence of malnutrition and stunting, poor conditions for underweight, and the prevalence of overweight is highest in Yogyakarta province, about 9.6% (Kemenkes RI, 2016).

The portion of food is related to food intake both in adults and children, and has an impact on body weight (Rolls et al., 2006). Children can regulate their energy intake during

meals. This ability is greatly influenced by factors such as the portion offered every day (Johnson et al., 2014).

Children's food pattern is determined by the interaction between behavior, regulation, parents' responses to the behavior, and also parents' beliefs and attitudes towards nutrition and parenting. This interaction forms selection and self-regulation of food in children (Birch et al., 2001)(Hetherington et al., 2011). These self-regulation factors include the involvement of children, parents, and control of children at meal times (Kesuma et al., 2015).

Mothers have an important role to play as a positive or negative influence on the quality of children's eating (Johnson et al., 2014). The way the mother in feeding the child is also closely related to the portion served or given (Vaughn et al., 2013). Parents generally do not pay much attention to the portion of food served for children and the decision to give a portion of food is based on children's characteristics (Crocker et al., 2009).

Parents' beliefs about children's maximum physical capacity play a role in determining beliefs about the child's ideal portion (Potter et al., 2018). The results of the study in Karanganyar showed that only 53% of children received the complementary feeding portion that was suitable for their age (Nuranitha, 2013).

Based on those how the parent's determined the portion size for children and the effect of parent's perception about portion size, those become objectives of this study.

METHODS

The type of this research is a cross-sectional study. The target population is all mothers and toddlers in Yogyakarta city. The affordable population is all mothers and under-five children registered in Posyandu in the city of Yogyakarta. Samples were 82 subjects from 5 Posyandu were taken using a purposive sampling method. Subject inclusion criteria are mothers who have toddlers aged 6-60 months, conduct Posyandu visits when collecting data, at least once a day practice direct feeding to children, and are willing to be the subject of research by signing informed consent. Subject exclusion criteria are children who are chronically ill and toddlers have special interventions in terms of food intake. Data on maternal characteristics were collected by interviews, including date of birth, education, occupation, knowledge of toddler food. Characteristics of children were collected from Posyandu's assessment, including date of birth, gender, weight, and body length or height. The food pictures were explored with a scaled food picture questionnaire by food groups. The estimated portion of food is grouped by type of food group, namely sources of carbohydrates, vegetable proteins, animal proteins, vegetables, fruits, and the overall portion. Estimated portion categories are under-estimated, appropriate and over-estimated. Nutritional status categories of toddlers used WHO indicators such as weight for age, length or height for age, and weight for length or height (WHO Multicentre Growth Reference Study Group, 2006).

The estimated portion of the meal is compared with the recommendation of the WHO breastfeeding complementary feeding practice taken from the 2014 Infant and Child Feeding Counseling Training Module, Ministry of Health of Indonesia (Kementerian Kesehatan RI, 2014b).

The portion of food is determined by the amount of each meal and the frequency of eating a day, then visualized into the scale on a plate of food. The scale on the dinner plate is in accordance with the recommendations of My Plate Contents for the age group 6-23 months and 2-5 years referred to from the 2018 Maternal and Child Health Movement (Gerakan Kesehatan Ibu dan Anak, 2017).

Photographs of food are taken from the Food Photo Book of the Indonesian Ministry of Health 2014 (Kementerian Kesehatan RI, 2014a). Statistical test with Kruskal Wallis is used to analyze the relationship of the child's age factor to portion estimates. Fisher exact test was used to analyze the relationship between nutritional status factors and estimated portions.

RESULT AND DISCUSSION

The characteristics of the research subject can be seen in Table (1) Characteristics of Participants. The table presents data on maternal age, age of children, age group of toddlers, sex of toddlers, and experience of mothers or caregivers accessing information about food portions for toddlers. The research subject was 82 toddlers and their mothers or caregivers. The median age of mother or caregiver is 31 years, with an age range of 21 to 64 years. Meanwhile, the median age of children under five is 32 months, with an age range of 21 to 64 months. The age of children under five is grouped by age less than 12 months, 12-24 months, 25-36 months, 37-48 months, and 49-60 months. The most under-five age group is 12-24 months of age, and the least is the age group of fewer than 12 months. The number of boys is 54% and girls are 46%. Around 72% of mothers or caregivers of toddlers claimed to have received information about toddler meals.

Table 1. Characteristics of The Subjects

Characteristics	Categories	N	%
Childre's Gender	Male	44	54
	Female	38	46
Children's Age Groups	<12 months	10	12
	12-24 months	23	28
	25-36 months	20	24
	37-48 months	16	20
	49-60 months	13	16
Mother/caregiver's portion size information exposure	Yes	59	72
	No	23	28
Characteristics	Mothers/caregiver's Age	31 years	Maximum
	Children's Age	32 months	64 years
		9 months	60 months

Table (2) presents the distribution of the frequency of estimates of mothers or caregivers of infants under the food and food groups as a whole. Food groups consist of sources of carbohydrates, vegetable protein, animal protein, vegetables, fruits, and whole foods. The portion of food groups is estimated according to categories that are under-estimated, appropriate, or overestimated. Most of the mother tends to over-estimated of carbohydrate sources (62%), under-estimated of animal protein sources (51%), under-estimated of plant protein sources (39%), over-estimated of vegetables (41%), and under-estimated of fruits (41%).

Table 2. Estimated Portions Size by Mother/Caregivers

Food Groups	Under-estimate (%)	Appropriate (%)	Overestimate (%)
Sources of Carbohydrate	6	32	62
Sources of Animal Protein	51	21	28
Sources of Vegetable Protein	34	27	39
Vegetables	38	24	38
Fruits	41	26	33
Overall Foods	29	33	38

Table (3) presents the distribution of the nutritional status of children base on the indicator of weight for age, length/height for age, and weight for length/height. On the weight for age indicator, it was found that most toddlers (83%) had normal nutritional status. Only 1% are overweight. However, there are 16% who are still classified as underweight and severe underweight. The proportion of underweight in children was 16%, stunting was 32%, and wasting 9%.

Table 3. Nutritional Status of The Children

Weight for Age	%	Length/Height for Age	%	Weight for Length/Height	%
severe underweight	1	severe stunting	11	severe wasting	2
underweight	15	stunting	21	wasting	7
normal	83	normal	64	normal	87
overweight	1	tall	4	obese	4

Table (4) presents the relationship between age, sex, weight, and nutritional status of infants to the estimated portion of food by mothers / caregivers. There was a significant relationship about toddler's age and portion size estimation of whole food groups, specifically in carbohydrates, plant proteins, vegetables, and fruits sources. There was a significant relationship about toddler's body weight and portion size estimation of whole food groups, specifically in plant protein and vegetable sources. There was no significant relationship about nutritional status and portion size estimation. If seen from the estimated portion of food as a whole, there are significant differences in the age of under-fives for mothers who are over and under-estimated, as well as for mothers who are in accordance with the estimated portion and over-estimated portion.

Table 4. Associations of Age, Gender, Weight, and Children's Nutritional Status with Children's Portion Size Estimation by Mother

Food Groups	P-Value (Level of Significancy: P<0,05)					
	Age	Gender	Weight	Weight for Age	Length/Height for Age	Weight for Length/Height
Sources of Carbohydrate	0.0161 ¹	0,664	0.0617	0,055	0,055	1,000
Sources of Animal Protein	0.0001 ¹	0,551	0.0001 ¹	0,741	0,741	0,695
Sources of Vegetable Protein	0.8078	0,602	0.6875	0,660	0,660	1,000
Vegetables	0.0007 ²	0,959	0.0077 ²	0,310	0,310	0,734
Fruits	0.0034 ¹	0,764	0.1970	0,912	0,912	0,280
Overall Foods	0.0002 ¹	0,035 ³	0,0011 ²	0,956	0,956	0,809

1. The associations were performed with Kruskal-wallis test. The result of post-hoc test was significant at under- and over-estimate groups, as well as appropriate and over-estimate group
2. The associations were performed with Kruskal-wallis test. The result of post-hoc test was significant at under- and over-estimate groups, as well as appropriate and under-estimate group
3. The associations were performed with Chi-Square test

The size of food portions in children under five can describe the energy intake (Dhingra et al., 2007). Parents present food portion sizes to children depending on how large portions are served to parents themselves, the child's perception of hunger and the child's body size (Kairey et al., 2018).

Child support for eating is one of the servings offered every day. The portion offered by parents has significant potential to increase children's intake and long-term energy balance. By consuming it, parents can instill hope or judge children will learn to consume it (Johnson et al., 2014).

Foster et al. studied about children's portion size estimation and food intake. In line with this research, protein and fat intake was under-estimated, but carbohydrate intake was underestimated too (Foster et al., 2017).

According to Nissinen et al, most mothers and educators have estimated the need for carbohydrate and protein sources well. However, there are not many sources of vegetables that estimate their needs correctly (Nissinen et al., 2018). Data from the USDA, many respondents think that carbohydrate and protein sources are more than those consumed, exaggerating the amount of fruit and vegetables consumed (Basiotis et al., 2002). Visual cues play an important role not only in the individual's ability to correctly determine differences in portion size, but also related to complaints about how to eat (for example, bite-size) in food (Jennifer O. Fisher & Kral, 2008).

The portion sizes of foods chosen and consumed by adults (and in some children's studios) have been shown to be proven by food packaging sizes and plate sizes (Benton, 2015). Visual illusions and related measures can also influence subjective norms about appropriate portion sizes, in a process referred to as anchoring and translated (J. O. Fisher et al., 2015).

The effect of portion size on eating children, effects through changes in feeding microstructure, especially bite size. Children's responses to food portion sizes can also reflect gathering experiences in learning about food, through post-ingestion feedback. This experience may be an expectation of satiety to predict the portion size of food consumed when eating (Wilkinson et al., 2012).

The effect of food portion size is discussed by Herman et al. There is a tendency, if served in large portions, it will be consumed in larger amounts as well. A larger portion causes a bigger bite, which may increase food intake by reducing the time of oral food exposure and certain sensory satisfaction (Peter Herman et al., 2015). Parenting style is associated with how to feed children, but not directly related to the child's food intake. Parents consider the child's weight to be a parameter of how much a child eats. The sex of the child can affect the food choices given by the mother. There is a tendency for boys to get more energy intake than girls (Bergmeier et al., 2015).

General considerations used by parents to determine the portion size of snacks include food freshness, location, child's hunger, and the period since the last meal. These considerations were derived from "experiments and experiences" that assess children's food intake or history of a child's eating behavior. The concept of eating is more related to food measurement than the personal experience of the amount to be eaten (Ueland et al., 2009). The way parents recognize the children's food quality is very important in ensuring a healthy diet for optimal development and prevention of disease. Some mothers do not have the correct perception of children's food and may not know the importance of correcting those misperceptions, so there is an increased risk of illness due to excess food and malnutrition (Adamo & Brett, 2014).

CONCLUSION

Most of the mother tend to over-estimated of carbohydrate sources, under-estimated of animal protein sources, under-estimated of plant protein sources, over-estimated of vegetables, and under-estimated of fruits. There was a significant relationship about toddler's age and portion size estimation of whole food groups, specifically in carbohydrate, plant protein, vegetables, and fruits sources. There was a significant relationship about toddler's body weight and portion size estimation of whole food groups, specifically in plant protein and vegetable sources.

RECOMMENDATION

Mother's perception of portion size estimation for toddlers was determined by the toddler's age and body weight. Further studies are needed to explore the knowledge and practices of appropriate portion size for toddler regarding their feeding practices.

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