Research Article **OJGH (2019) 2:15**

Open Journal of Gastroenterology and Hepatology
(ISSN:2637-4986)

Dietary intakes, nutrition status and micronutrient deficiency in picky eating children under 5 years old in the Vietnam National Hospital of Pediatrics

LuuThi My Thuc[1]; Nguyen Duc Tam[2];Vu Ngoc Ha[3], Nguyen Quang Dung[3], Nguyen Thi Hang Nga[1]; Nguyen Thi Hang[1]

[1]Department of Nutrition, National Hospital of Pediatrics, Vietnam
[2]Department of Pediatrics, Thai Binh Medical University, Vietnam
[3]Department of Nutrition and Food Safety, Hanoi Medical University, Vietnam

ABSTRACT

Background: Recently, picky eating behaviors have become more and more common in Vietnam. Early identification of nutritional deficiencies through assessment of nutritional status and dietary intake is important to be able to intervene in time to help children optimum in growing physically and cognitively. **Objective:**The aim of this study was to evaluate dietary intake of under five years old children with picky eating behavior and the consequences of these diets on their nutrition status. **Methods:** Dietary intake was assessed using 24-hour dietary recall for124 under five years old who presented with picky eating behavior at Vietnam National Hospital of Pediatrics. Nutrients intakeswere calculated using validated dietary analysis software and compared with age-appropriate Vietnam Recommended(Recommended-NutrientIntakes- RNI). Nutrition status was assessment follow WHO guideline 2009, micronutrients deficiency was evaluated based on laboratory tests. **Results:**84.7% of the children had an unbalanced diets, lacking in overall energy intake(70-90% of RNI:48 and ≤ 50%: 19%). Prevalence of stunting (32.3%), under weight (28.2%), wasting (13.7%) and micronutrients deficiency was high. **Conclusions:** Children with picky eating behavior had high prevalence of inadequate diet, malnutrition and micronutrient deficiencies. Early identification and treatment of picky eating behavior in children is needed to prevent malnutrition.

Keywords: picky eating, dietary intake, micronutrient deficiency

***Correspondence to Author:**
Dr.LuuThi My Thuc,
Department of Nutrition, National Hospital of Pediatrics, 18/879 La Thanh Street, Dong Da District, Hanoi, Vietnam.

How to cite this article:
LuuThi My Thuc; Nguyen Duc Tam; Vu Ngoc Ha, Nguyen Quang Dung, Nguyen Thi Hang Nga; Nguyen Thi Hang. Dietary intakes, nutrition status and micronutrient deficiency in picky eating children under 5 years old in theVietnam National Hospital of Pediatrics.Open Journal of Gastroenterology and Hepatology, 2019, 2:15

eSciPub LLC, Houston, TX USA.
Website: https://escipub.com/

INTRODUCTION

Nutrition during early life especially first two years of life may have long-lasting effects on physical development and children's cognitive. No wonder parents of young children worldwide are concerned with the eating behavior of their children. However, too much focus on eating by caretakers can cause eating behavior disorders. Indeed, the prevalence of picky eating is increasing in the world [1]. Picky eating behavior is described as consumption of an inadequate variety of foods, often characterized as eating limited amounts of food compared to children of the same age, gender or imbalanced composition of the diet[2],[3],[4]. It can occur at any age, both in healthy children and children with underlying disease or even in people with special requirements and is often accompanied many factors such as disease, environmental, social and psychological in individual [5],[6]. Picky eating behavior can have a direct impact on the total calories as well as specific nutrients intake. Furthermore, prolonged anorexia may result in severe malnutrition, cognitive impairment, behavioral abnormalities, decreased intellectual development, reduced immunity [2];[7];[8]; [9]; [10], its consequences can be severe and even be fatal due to endocrine and metabolic disorder[8];[10];[11].

Picky eating is a challenging problem for pediatricians as well as parents because of high rates of picky eating in the world and prevalence of nutrients deficiency are also high among them[1];[3]; [12]; [13];[14]. For effective treatment, appropriate interventions are needed. Therefore, assessment of the child's nutrition status, nutrients consumed, and nutrients deficiencies are necessary to build a plan for nutrients supplementation. In our hospital, every day, there are many children are given nutrition counseling but the question whether the best way to intervene children with picky eating have not still answered. To solve this problem, we did a survey with aim to assessment nutrient intake, nutrition status and nutrient deficiency in picky eating children.

MATERIALS AND METHODS

Study sample: All children presenting with picky eating behavior from 1 month to 60 months of age and their parents were eliginle. Data was collected as a cross-sectional study, between March 2017 and November 2017 from nutrition consultation clinic of Vietnam National Hospital of Pediatrics.

Recruitment criteria included any child which had at least two of the three followed criteria which had frequency more than 3 times per week and last more than 30 days would be diagnosed as picky eating [1];[3]; [4]; [5];[15].

- *Qualitative criteria*: Psychologically, children must have behaviors that refuse to eat such as avoiding, opposing, not cooperating when being fed like turned away, not open mouth, sprayed, dropped food, snacked food, or feared food, cried every feeding.
- *Quantitative criteria*: There is a decrease in the amount of food consumed in meals compared to before or compared to normal children or eat only certain foods because of specific tastes, textures, smells or appearances. Poor diet compared with recommended needs.

The food intake is not enough to meet the Vietnam recommended energy requirement(RNI):

- Children under 6 months of age :<555 Kcal per day
- Children from 6 to under 12 months :<710 Kcal per day
- Children from 1-3 years :<1180 Kcal per day
- Children from 4- 6 years :< 1470 Kcal per day
- *The duration of a meal*:lasts more than 30 minutes.

Exclusion criteria included: Age (under 28 days of age, over 60 months of age), Anorexia caused by: mouth ulcers, acute or chronic disease and medical that cause loss of appetite or deliberately anorexia, Loss of appetite occurs under 30 days.

Data collection methods and evaluation criteria

Socio-demographics: A structured questionnaire was used to collect socio-demographic information through interviewing the parents, including child's date of birth, gender, ethnicity, birth weight, a history of childbirth and illness.

A medical doctor examined each child and recorded information on chronic diseases or congenital disease.

Nutrition status and micronutrients deficiency: Nutrition status was assessed, and Z-scores calculated according WHO standards[16]. Selected micronutrients concentrations were analyzed in plasma for assessment of micronutrient deficiency.

Variables for picky eating:

According to criteria for picky eating, picky eaters were characterized as children who consumed an inadequate variety amount of food, rejection of foods or loss of appetite, the time a meal lasting too long, often more than 30 minutes[1] ;[3] ;[4];[5];[15]. In our study, the definition of picky eating not provide to parents before assessment and parent's perception of picky eating were used to provide picky eating data from parent's views

+ To evaluate behavior during the meal and refusal to eat, we used **(**Child Eating Behavior Inventory –CEBI) with the aim: Identify the child's personality/eating behavior through confirmation by their parents. The questions were focused on child-to- his caregiver interaction during feeding, child's behavior, child's food (adequate, variety, amount of food, tastes, textures, smells or appearances), parental influence, caregiver's perceptions were used to judge if their child was a "picky eater", under causes illness that may affects the eating behavior of the child. Questionnaires to evaluate behavior during the meal were designed based on previous studies such as [3]; [5]; [12];[17] and were modified that suit for our country.

+ To evaluate the reduction of food intake to categorize the level of picky eater, we used 24-hour food intake record/recall to estimate the average daily energy intake. Food logs or 24-hour food recalls are important for dieticians to collate and must include: All food groups; Well defined meal times; Food textures at each meal; Certain behaviors during meal-time such as gaging or spitting out food should also be noted.

+ To classify picky eating: base on quantity of energy intake

Mild picky eating: energy intake is achieved 70-90 % of recommendation

Moderate picky eating: energy intake is achieved 50-<70% of recommendation

Serve picky eating: energy intake under 50% of recommendation

Statistical analysis: Data entered by software Statistical Package for Social Sciences (SPSS16.0). Anthropometric data were processed using the Anthro software of WHO 2007. Assess the average food consumption, energy intake per day per child using KP.mdb software. Data analysis by software SPSS16.0. Before using statistics, variables (variables) are checked for the standard distribution.

RESULTS

Study population:

We have collected 124 picky eating children (65 boys and 59 girls) since March to November 2017. Picky eating occurred slightly more in boys than in girls (52.4% compared 47.6%),however, the difference was not statistically significant (p>0.05). Picky eating was highest in children aged 12-24 months (38.7%) and lowest in children aged under 6 months (4%). There was a significant difference in picky eating among the age groups (p <0.001- Chi square) (*Figure 1*). The mean (standard deviation, SD) age of the 124 picky eating children was 24.66 ± 17.02 months with a range of 4 -58 months.

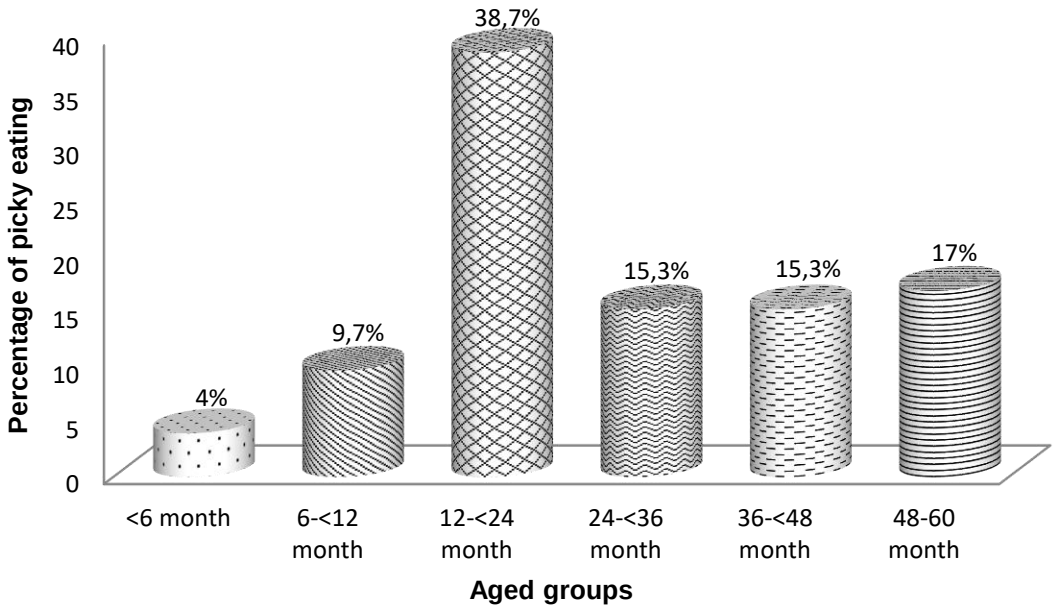

Figure1: Distribution of Picky eating by aged groups

In general, most of children were in mildpickyeating (48.38%), while severe picky eating affected 18.56% of them.Severe picky eating wasnotobserved in infants<12 monthsof age but it was most common in children with aged from 12-24 months (33.3%) (*Table 1*).

Table 1.Relationship between levels of picky eating and age of children

Age (months)	Level of picky eating n (%)			Total	p (Phi Cramer's V)
	Mild	Moderate	Serve		
<6 months	4 (80)	1 (20)	0	5 (100)	
6- <12 months	9 (75)	3 (25)	0	12 (100)	
12- <24 months	16 (33.33)	16 (33.33)	16 (33.33)	48 (100)	<0.05
24-<36smonths	13 (68.42)	5 (26.32)	1 (5.26)	19 (100)	
36-<48 months	11 (57.89)	5 (26.32)	3 (15.79)	19 (100)	
48- 60 months	7 (33.33)	11 (52.38)	3 (14.29)	21 (100)	
Total	60 (48.38)	41 (33.06)	23 (18.56)		

Level is based on the energy-producing component of the macronutrients compare to Vietnam RNI

Mild: energy intake achieved 70-90% of Vietnam RNI

Moderate: energy intake achieved 50-<70% of Vietnam RNI

Serve: energy intake under 50% of Vietnam RNI

Nutrient intake

Median daily nutrient intakes are shown in *Table 2*.In general, the older the child, the lower the nutrient intake as percentage of RNI. All children older than 36 months of age consuming insufficient amounts of calcium. Children under 6 months of age had Zinc intake at level 80% of RNI. Children under 36 months

of age had zinc consumption higher than children older than 36 months. Similarly, iron, vitamin A, and vitamin C intake also decreased in children older than 36 months of age.

Table 2. Daily some nutrients intake

Age groups	Mean±SD	% of children achieved RNI	Vietnam RNI
Calcium(mg/day)			
< 6 months	348.8 ± 185.8	80	210
6-<12 months	330.4 ± 93.9	75	270
12-<24 months	321.5 ± 132.5	10.42	500
24-<36 months	432.6 ± 257.9	21.05	800
36-<48 months	409.8 ± 156.8	0	800
48-≤60 months	354.9 ± 164.9	0	800
Zinc (mg/day)			
< 6 months	3.5 ± 2	80	2
6-<12 months	4 ± 1	91.67	3
12-<24 months	4.5 ± 1.5	83.33	3
24-<36 months	5.7 ± 2	94.74	5
36-<48 months	5.1 ± 1.7	57.9	5
48-≤60 months	5.1 ± 1.8	42.9	5
Iron (mg/day)			
< 6 months	3.4 ± 2.1	100	0.27
6-<12 months	4.4 ± 2.2	0	11
12-<24 months	4.9 ± 2.5	16.67	7
24-<36 months	6 ± 2.4	26.32	10
36-<48 months	6 ± 2.4	5.26	10
48-≤60 months	5.7 ± 2.5	4.76	10
Vitamin A (µg retinol/ day)			
< 6 months	639.8 ± 509.5	100	375
6-<12 months	671.6 ± 231.8	91.67	375
12-<24 months	598 ± 327.9	66.67	400
24-<36 months	702 ± 461.4	78.95	400
36-<48 months	567.9 ± 303.3	42.11	500
48-≤60 months	612.2 ± 449.2	47.62	500
Vitamin C (mg/day)			
< 6 months	33 ± 22.4	40	30
6-<12 months	50.7 ± 23.5	66.67	35
12-<24 months	54.7 ± 39.4	56.25	40
24-<36 months	57.1 ± 36.9	68.42	40
36-<48 months	41.9 ± 32.6	36.84	45
48-≤60 months	45 ± 53.4	33.33	45

Nutrition status

The rate of malnutrition was high among picky eating children (*Table 3*). There were 45.2% picky eating children suffering from malnutrition and the rate of malnourished children was highest among children aged 12-24 months.Prevalence of stunting was highest (32.3%), followed by underweight (28.2%) and wasting (13.2%). Furthermore, underweight was common in children from 48-60 months of age group (31.6%) (*Table 4*). There were significant differences in underweight with age of the children (p<0.05). Stunting was common in children aged 24-36 months and no children under 6 months of age was stunting. Wasting was higher in 2 groups (24-36 months and 48-60 months of age) than the other.

Table 3. Nutritional status among picky eating children

Age	Nutritional status		Total	P (PhiCramer's V)
months	**Malnutritionn(%)**	**Normaln(%)**		
< 6 months	4 (7.1)	1 (1.5)	5	
6-<12 months	4 (7.1)	8 (11.8)	12	
12-<24 months	17 (30.4)	31 (45.6)	48	**<0.05**
24-<36 months	11 (19.6)	8 (11.8)	19	
36-<48 months	6 (10.7)	13 (19.1)	19	
48-≤60 months	14 (25)	7 (10.3)	21	
Total	56 (45.2)	68 (54.8)	124	

Malnutrition counted for all underweight, stunting, wasting. Child had at least one of three kind malnutrition would count a malnutrition.

Table 4.Malnutrition and age of the child

Age (months)	Underweight		Stunting		Wasting	
	n	**%**	**n**	**%**	**n**	**%**
< 6 months	2	5.3	4	10	0	0
6-<12 months	4	10.5	3	7.5	1	7.1
12-<24 months	8	21.1	14	35	3	21.4
24-<36 months	7	18.4	9	22.5	4	28.6
36-<48 months	5	13.1	3	7.5	2	14.3
48-≤60 months	12	31.6	7	17.5	4	28.6
Total	38	100	40	100	14	100
P (PhiCramer's V)	<0.05		>0.05		>0.05	

Some substratesdeficiency in laboratorytest

The prevalance of children had low concentration of substrates in plasma was high (*Table 5*). Anemia in picky eating children was21% withmild anemia (13.7%) and moderate anemia (7.3%) (*Table 5*). However, the rate of irond eficiency was higher than anemia (57.3% compare to 20%) and these rumiron concentration was low at 9.83 (11-25µg/l).There were 63.7% picky eating children got zincd eficiency and median of serum zinc was low (9.8 ± 5.8 µmol/l). Most of picky eating were calcium deficiency (83.9%) and the concentration of serum calcium ion also was low (1.03 ± 0.06mmol/l). In addition, prevalence of albumin and protein deficiency in plasma was low; the median of protein in plasma also was low (68.2 ± 4.2 g/l).

Table 5.Micronutrient deficiency in labor test

	rank	n	%	p (Chi – square)
	Mild	17	13.7	
Anemia*	Moderate	9	7.3	>0.05
	Serve	0	0	
MeanofHb		116.7 ± 10.1 g/l		
Zincdeficiency		79	63.7	>0.05
MeanofZn		9.8 ± 5.8 µmol/l		
Calciumdeficiency		104	83.9	<0.05
MeanofCalcium		Ca total: 2.3 ± 0.11mmol/l Ca ion: 1.03 ± 0.06mmol/l		
Iron deficiency		71	57,3	>0.05
Meanofiron		9.83 **±** 5.1 µcg/l		
Lowofprotein		3	2,4	<0.001
Meanofprotein		68.2 ± 4.2 g/l		
LowofAlbumin		3	0,8	<0.001
Meanofalbumin		41.1 ± 2.3 mg/l		

**Rank of anemia: Hemoglobin from 90-110 g/l it means mild anemia; Hemoglobin from 60 to below 90 g/l it means moderate anemia and hemoglobin below 60g/l it means serious anemia.*

Some substrates were deficiency significant depend on the child'sage (*Table 6*). Children from 12-24 months of age were highest in substrates deficiency. The rate of anemia was highest in children from 6 – 24 months of age and iron deficiency was highest in children from 12-24 months. Zinc and calcium deficiency were also higher in children from 12-24 months (35.4% Zinc deficiency and 37.5% Calcium deficiency)

Table 6. Micronutrient deficiency in laboratory base on aged group

Age (months)	**Anemia n(%)**	**Zn deficiency n(%)**	**Ca deficiency n(%)**	**Ion deficiency n(%)**
< 6 months	2 (7.7)	4 (5.1)	1 (1)	4 (5.6)
6-<12 months	9 (34.6)	6 (7.6)	5 (4.8)	11 (15.5)
12-<24 months	9 (34.6)	28 (35.4)	39 (37.5)	30 (62.5)
24-<36 months	4 (15.4)	12 (15.2)	19 (18.3)	12 (16.9)
36-<48 months	2 (7.7)	12 (15.2)	19 (18.3)	7 (9.9)
48-≤60 months	0 (0)	17 (21.5)	21 (20.2)	7 (9.9)
Total	26 (21)	79 (63.71)	104 (83.9)	71 (57.3)
p (Phi Cramer's V)	<0.001	>0.05	<0.001	<0.05

DISCUSSION

Anorexia is a common problem in young children due to limited knowledge, practicing infant feeding. Picky eating usually does not appear at birth, which occurs during feeding the child. It is the result of a change in the appetite of child that fits the child's developmental needs but if the parent is unaware of it, it will lead to forced feeding. Forced of feeding cause against

behavior of the child during eating as well as afraid of eating and leading to picky eating. In children under 5 years old, normal growth rate of children very fast in the first year, then this rate has been slowed down since the second year of life. Along with the slow growth at this stage, the baby's appetite tendency is also markedly reduced. There are many parents who are confused about the slow growth of the child although the child is still within normal rank. It causes stress for both children and their parents during the meal. It is popular in children older than one year so the prevalence of picky eating also higher in these ages. We found that *(Finguer 1),* the prevalence of picky eating was highest in children from 12-24 months old (38.7%) and only a few children under 6 months of age got anorexia (4%). The difference in the rate of anorexia between age groups was statistically significant with p <0.001. Picky eating in the study was mostly mild anorexia (48%) with an energy intake of 24 hours at 70-90% of RNI, and moderate level (33%) with energy intake at 50 <70% of RNI and severe level (19%) with energy intake only under 50% of RNI. There were statistically significant difference with p <0.05 between level of picky eating and agedgroup*(Table 1).*Severe picky eating was not observed in infants under 12 months of age. Severe picky eating was most common in children aged 12-24 months (33.33%).The older the child, the higher the risk of picky eating. Picky eating can occur very early, but usually occurs in older children more than 12 months of age because at these time, children could express their emotions and requirement by behavior, language. Further more, children have started to eat solid food instead of smooth liquid before since 12 months old, and from 18-24 months was the time children to eat rigid food and learn to eat hard food with their family, due to these two stages of transition were very important to children, so if not properly fed to the child's development stage, it is easy to develop picky eating. In general, studies in Vietnam as well as other countries around the world found that anorexia often occurs with high rates in children older 12 months of age [1]; [3]; [8].

Children had many different reasons for eating or not than adults. Therefore, it was very difficult to make plans for eating to ensure children get enough nutrients intake, especially for picky eating children. There were a lot of picky eating children had nutrients content in the diet were too low compare to RNI (*Table 2*). Dubois (2007) also found the same results about nutrients intake lower in picky eating children than normal children[18].

For young children, picky eating results in severe development of the child's physical and mental development, as picky eating big effects on growth so it easier caught malnutrion. Malnutrition as a results of less or imbalance nutrients in their diet. The older children, the higher the nutritional deficiency in theire diet (*Table 2*). There were not any children older than 36 months of age got adequate calcium in diet as RNI. There were 57.9% children with age from 36-48 months had zinc indiet as RNI and 42.9% older children had Zinc as RNI. So, the older childer, the higher prevalence of zinc deficiency in their diet. Zinc and Calcium are very important for children especialy for growth and height. So, if lack of these nutrients for a long time, the children will be stunting. According WHO 2007, height for age was low it means nutrition deficiency lasted for long time, it causes stunting. Picky eating children were dificiened a lot of micronutrients so it effects to whole of the body such as weight, height, mental, immune systerm depends on the timeand for how long children were in deficiency. Iron and vitamin C contents in picky eating diet also were too low such as iron was almost abscent in diet of children from 6 – 12 months of age only iron was enought in children under 6 months old because these children get iron from breast milk. There was limited in our study because we only average estimate quantity of breast milk in children still breast feeding so may be not give exactly quantity of

micronutrients contents in the breast milk. By these reason, so the picky eating children under 24 month of age who were breast feeding might be have under or over estimate of nutrients intake. Due to imbalance diet and deficiency in nutrition intake, so the rate of malnutrition was high among picky eating children (*Table 3*) with stunting was 32.3%, underweight was 28.2% and wasting was 13.7%. The rate of malnourished children was highest among children aged 12-24 months, this was absolutely right as at these ages children consumed least nutrients than others. Some researches in Vietnam had the same results in prevalence of malnutrition in picky eating children [8].The overall prevalence of underweight malnutrition in our study was 28.2%, more than double the national prevalence of underweight and prevalnece of stunting also higher than national prevalence of stunting (32.3% vs 21.8%)[19]. Thus, the picky eating children were very high rates of malnutrition especialy stunting. So untill now, stunting still has a problem in public health in Vietnam, so that it is important to focus on the prevention of malnutrition in this group.

Among 124 picky eating children, there were 21% anemia. The children from 6-24 months had higher rate of anemia than the others (69.2%). There were 63.7% children with zinc deficiency. Among picky eating children older 36 months, there were around 50% these children consumed adequate zinc in their diet (*Table 2*), but the rate of zinc deficiency in these group was only 15.2% for 36-48 months and 21.5% for children older than 48 months lower than children from 12-24 months (35.4%). There were 63.7% children had low zinc concentration in plasma (*Table 5*). Similar for calcium, (*Table 2 and Table 5*), the rate children consummed adequate calcium in diet low in children older 24 months, even there were not any children older 36 months consummed adequate calcium. Eventhough, the rate calcium deficiency in labor test was low than children from 12-24 months. Iron concentration in diet of picky eating children also too low, especialy there were no any children form 6-12 months get enought iron from their diet. Due to lack of iron in diet so concentration of iron in plasma also was low with 9.83 ± 5.1 µg/l (p=0.11).

Conclusion: Due to picky eating children have inbalance or nutritional deficiencies intakes so the prevalence of malnutrition in this group is high as well as the rate of nutritional deficiency in the blood test alse is high. Picky eating children should be focused on solutions to prevent the consequences of nutritional deficiency.

REFERENCE

1. B. R. Carruth, P. J. Ziegler, A. Gordon et al (2004). Prevalence of picky eaters among infants and toddlers and their caregivers' decisions about offering a new food. J Am Diet Assoc, 104(1 Suppl 1), s57-64.
2. C. M. Wright, K. N. Parkinson, D. Shipton et al (2007). How do toddler eating problems relate to their eating behavior, food preferences, and growth? Pediatrics, 120(4), e1069-75.
3. D. Y. Goh and A. Jacob (2012). Perception of picky eating among children in Singapore and its impact on caregivers: a questionnaire survey. Asia Pac Fam Med, 11(1), 5.
4. C. Jacobi, G. Schmitz and W. S. Agras (2008). Is picky eating an eating disorder? Int J Eat Disord, 41(7), 626-34.
5. B. Kerzner, K. Milano, W. C. MacLean, Jr. et al (2015). A practical approach to classifying and managing feeding difficulties. Pediatrics, 135(2), 344-53.
6. L. Dubois, A. Farmer, M. Girard et al (2007). Problem eating behaviors related to social factors and body weight in preschool children: A longitudinal study. Int J Behav Nutr Phys Act, 4, 9.
7. L. Lindberg, M. Ostberg, I. M. Isacson et al (2006). Feeding disorders related to nutrition. Acta Paediatr, 95(4), 425-9.
8. Mai Thị Mỹ Thiện (2016). Anorexia in children under 5 in Ho Chi Minh city. Vietnam Journal of Nutrition and Food 40-46.
9. A. T. Galloway, L. Fiorito, Y. Lee et al (2005). Parental pressure, dietary patterns, and weight status among girls who are "picky eaters". J Am Diet Assoc, 105(4), 541-8.

10. K. M. Kwon, J. E. Shim, M. Kang et al (2017). Association between Picky Eating Behaviors and Nutritional Status in Early Childhood: Performance of a Picky Eating Behavior Questionnaire. Nutrients, 9(5).
11. R. K. Chandra (2002). Nutrition and the immune system from birth to old age. Eur J Clin Nutr, 56 Suppl 3, S73-6.
12. R. Manikam and J. A. Perman (2000). Pediatric feeding disorders. J Clin Gastroenterol, 30(1), 34-46.
13. B. Kerzner (2009). Clinical investigation of feeding difficulties in young children: a practical approach. Clin Pediatr (Phila), 48(9), 960-5.
14. H. S. Maranhao, R. C. Aguiar, D. T. J. Lira et al (2018). Feeding Difficulties in Preschool Children, Previous Feeding Practices, and Nutritional Status. Rev Paul Pediatr, 36(1), 7.
15. Chatoor I (2009). Diagnosis and Treatment of Feeding Disorders in Infants, Toddlers, and Young Children.
16. WHO (2009). Child Growth Standards Growth velocity based on weight, length and head circumference Methods and development, 242.
17. W. Crist and A. Napier-Phillips (2001). Mealtime behaviors of young children: a comparison of normative and clinical data. J Dev Behav Pediatr, 22(5), 279-86.
18. L. Dubois, A. P. Farmer, M. Girard et al (2007). Preschool children's eating behaviours are related to dietary adequacy and body weight. Eur J Clin Nutr, 61(7), 846-55.
19. National Institute of Nutrition (2015). [Statistics on nutritional status over the years].