
PICKY EATING IN CHILDREN: ORAL MOTOR DISORDER AND DELAYED SPEECH AS RISK FACTOR

Audi Yudhasmara¹, Asrini Kaninta Adani², Ida Narulita Dewi³, Widodo Judarwanto⁴, Sandiaz Yudhasmara⁵

Bunda Women and Children Hospital Jakarta, Indonesia^{1,4}, Public Health Center Kebon Jeruk Jakarta, Indonesia², Hermina General Hospital Jakarta, Indonesia³, Ulin General Hospital Banjarmasin, Indonesia⁵
E-mail: audiyudhasmara@gmail.com

KEYWORDS

Picky Eater, Fussy Eater, risk factor, characteristics, oral motor disorder, delayed speech.

ABSTRACT

Picky eating is not a diagnosis or disease, but rather an indication or a symptom of underlying irregularities within a child's physiology. It manifests as a refusal to consume food or drink or struggles with ingesting appropriate types and quantities for their age, from the simple act of opening one's mouth without coercion, to chewing, swallowing, and digesting without any external pressure or need for specific nutrients or medications. Numerous risk factors have been identified as significant contributors to the presence of picky eating in children, most notably oral motor disorders and delayed speech development. This observational analytic study involved 138 children between the ages of 6-60 months as subjects, with interviews conducted by their parents serving as the primary method of data collection. Developmental Pre-screening Questionnaire (KPSP) and modified questionnaire of risk factor of picky eating were utilized to evaluate each child's overall development and assess potential risk factors related to feeding difficulties. Findings from this investigation indicated that both oral motor disorders and delayed speech had notable effects on children aged 6-60 months residing in Malang.

INTRODUCTION

Improving children's growth and development from an early age is a priority for parents. Efforts in improving the quality of human resources must be made early and continuously to prevent or detect diseases and disorders in children. Parents often face many questions and problems in doing so. One of the problems is difficulty eating in children, which has a direct impact on their growth and development (Goh & Jacob, 2012).

Picky eating is not a diagnosis or a disease, but rather a symptom or sign of abnormalities and problems in the child's body. Picky eating refers to children who do not want or refuses to eat or have difficulty eating certain type and amount of food or drink that is appropriate for their age, starting from not opening the mouth firmly, chewing, or swallowing to the process of digestion and absorption without the help of consumption of certain vitamins and drugs (Judarwanto, 2009).

Early childhood is considered a golden period for brain growth and the development

of children's thinking abilities. It is also an important period for children's brains to become more open, educated, and enriched. However, the downside is that children are more sensitive to the environment, especially poor nutritional intake, lack of stimulation, and inability to access adequate health services (Ministry of Health RI, 2011). (Yusuf et al., 2008) state that brain growth reaches 75% of adult size by the age of 5 years. Ironically, infants and children up to the age of 5 years are vulnerable to malnutrition, including PEM (Diana et al., 2010). This confirms that the age 0-5 group is the stage where child development needs to be improved. Six months is the age when infants should be introduced to complementary foods (IDAI, 2015). Therefore, six months of age is the minimum age to determine whether a child has feeding difficulties or has risk factors (Bryant-Waugh et al., 2010).

In the United States in 2004, 19-50% of parents complained that their children were very picky eaters, resulting in certain nutrient deficiencies (Waugh et al., 2006). The Gateshead Millennium Baby Study in 2006 in the UK stated that 20% of parents said their children had eating problems, with the highest prevalence of children only wanting to eat certain foods (Carruth et al., 2004).

Research conducted in Jakarta stated that in preschool children aged 4-6 years, the prevalence of eating difficulties was 33.6%. 79.2% of this number has lasted more than 3 months (Judarwanto, 2008). According to the child development clinic of the Affiliated Program for children development at George Town University, 6 types of eating difficulties in children are only willing to eat liquid or crushed food: 27.3%, difficulty sucking, chewing, or swallowing: 24.1%, strange and odd eating habits: 23.4%, dislikes a wide variety of foods: 11.1%, delayed self-feeding: 8.0%, mealing time tantrums: 6.1% (Judarwanto, 2009).

Based on the data, the age group with the most eating difficulties is 1-5 years old (58%), and the largest gender is male (54%). Feeding problems were found in 50 out of 109 children (45.9%) (Soediby & Mulyani, 2016). Symptoms of eating disorders in children include (1). difficulty chewing, sucking, and swallowing food or only eat soft or liquid food, (2) vomiting or spitting out food that enters the child's mouth, (3) eating for a long time and playing with food, (4) there is no desire to eat or shut the mouth when being fed, (5) spilling food or deliberately vomiting, refusing feedings from parents, (6). Disliking various foods and (7) eating habits that are unlike those of other children (Judarwanto, 2009).

Processing food and speaking is said to use an oral motor which refers to the use and coordination of the lips, tongue, jaw, teeth, and hard and soft palate. One of the oral motor coordination disorders is feeding difficulties so oral motor, speech, and feeding difficulties in children can theoretically influence each other. so eating and speaking have a close relationship since the early stages of human development (Case-Smith et al., 2014).

Understanding this relationship is critical to identifying and addressing potential problems in both areas. Meanwhile, there is still very few research on feeding difficulties in children in Malang, especially regarding risk factors for feeding difficulties in children aged 6 to 60 months. Knowing the relationship between oral motor disorders, speech difficulties, and feeding difficulties in children will be important as a first step to addressing the problem of eating disorders and preventing eating disorders and other problems that may arise in children (Angraini et al., 2021).

METHOD RESEARCH

This study is an observational analytic cross-sectional study to determine the role of oral motor disorders and speech difficulties in feeding difficulties in children aged 6-60 months in Malang City in 2018.

Malang City consists of five sub-districts and randomization was used to determine the study areas. Of the five sub-districts, data were collected in villages under six health centers in Malang with a large number of children aged 0-60 months. These are Dinoyo with 5952 children, Mojolangu with 3855 children, Gribig with 5473 children, Arjuno with 2627 children, Kendalkerep with 4638 children, and Kedungkandang with 4214 children. These six health centers are also the health centers that have collaborated with Saiful Anwar Hospital Malang.

This study was conducted in Kendalkerep, Arjuno, Dinoyo, Mojolangu, Kedungkandang, and Gribig health centers, which managed to collect 138 child subjects with the youngest age of 6 months and the oldest of 60 months and had an average age of 27.7 months.

The inclusion criteria in this study were all children aged 6-60 months who came as Posyandu participants in an area of Malang City from January 2018 - February 2018. The child's parents could read and understand Indonesian and were willing to participate in the study with a written statement. Children with clinically diagnosed congenital abnormalities, post-infection sequelae, and organic dysfunction were excluded from the study sample. The study used a modified questionnaire containing several questions from the Children's Eating Behaviour Questionnaire (CEBQ), risk factors related to the subjects and their environment, and the KPSP recommended by the Ministry of Health to assess the development of toddlers by interview. Data were processed using the SPSS 11 program with a significant level or probability value of 0.1 ($p = 0.1$) and a 90% confidence level ($\alpha = 0.1$). The analysis used was bivariate analysis or examining the relationship between the dependent and independent variables using the chi-square test (Hall & Cohn, 1986).

RESULTS AND DISCUSSION

Description of Respondent Characteristics

Table 1
Respondent Characteristics

No.	Characteristics	Category	f	%	Mean	SD
1	Child's age (month)				27.7	13.3
2	Gender of the child	Male	56	40.9%		
		Female	81	59.1%		
3	Nutritional status	Undernourished	18	13.1%		
		Good nutrition	118	86.1%		
		Over nutrition	1	0.7%		
4	Exclusive breastfeeding	No	10	7.3%		
		Yes	127	92.7%		
5	Father's Education	Elementary	27	19.7%		
		High	110	80.3%		
6	Father's occupation	Working	137	100.0%		
		Not working	0	0.0%		

7	Father's Income	Low	27	19.7%
		Medium	74	54.0%
		High	36	26.3%
8	Mother's Education	Low	21	15.3%
		High	116	84.7%
9	Mother's Occupation	Working	92	67.2%
		Not working	45	32.8%
10	Mother's Income	Low	106	77.4%
		Medium	24	17.5%
		High	7	5.1%
11	Ethnicity/race	Non-Javanese	13	9.5%
		Javanese	124	90.5%
12	Socio-economics	Low	43	31.4%
		Medium	64	46.7%
		High	30	21.9%

Based on the data from the sample collection, the gender proportion has quite different numbers, namely 56 children, or 40.9 percent male, and 81 children, or 59.1 percent female. Description of nutritional status obtained 18 people or 13.1 percent had a nutritional status less, 1 person, or 0.7 percent had a nutritional status more, and 118 people, or 86.1 percent had a good nutritional status. From the sample collection, it was also obtained that children under five who did not receive exclusive breastfeeding were 10 children or 7.3 percent and were given exclusive breastfeeding and 127 children or 92.7 percent.

The description of ethnicity/race obtained 13 people or 9.5 percent were of non-Javanese origin 124 people or 90.5 percent were of Javanese origin and were cared for by their mother and father, 102 people, or 74.5 percent, 31 people, or 22.6 percent were cared for by grandparents, and 4 people or 2.9 percent used caregivers.

Data regarding parental education obtained the education level of 27 fathers or 19.7 percent with elementary education and 110 or 80.3 percent with higher education. Equipped with 137 fathers or 100.0 percent working and 0 fathers or 0.0 percent not working Description of fathers' income is dominated by fathers with moderate income as much as 54.0 percent, then 27 people or 19.7 percent with low income, and 36 people or 26.3 percent with high income. Data regarding the child's mother showed that the mother's education level was low at 21 people or 15.3 percent and 116 people or 84.7 percent with high education. Mothers who have jobs are found to be 92 people or 67.2 percent and 45 people or 32.8 percent do not work. The income of the child's mother obtained data with 106 people or 77.4 percent with low income, 24 people, or 17.5 percent with moderate income, and 7 people, or 5.1 percent with high income. Socio-economic description obtained 43 people or 31.4 percent have a low category, 64 people or 46.7 percent have a medium category, and 30 people, or 21.9 percent have a high category.

Table 2

Basic characteristics of study subjects and feeding difficulties in children

Variable		N	%
Gender	Male	13	40,6%
	Female	19	59,4%
Nutritional status	Less	5	15,6%

	Good	27	84,4%
	Over	0	0,0%
Exclusive breastfeeding	No	5	15,6%
	Yes	27	84,4%
Father's education	Yes	11	91,7%
	Elementary	1	3,1%
	High	31	96,9%
Father's Occupation	Work	32	100%
Father's Income	Low	6	18,8%
	Medium	17	53,1%
	High	9	28,1%
Mother's Education	Low	3	9,4%
	High	29	90,6%
Mother's Occupation	Not working	17	53,1%
	Medium	7	21,9%
	High	3	9,4%
Mother's Income	Low	22	68,8%
	Medium	7	21,9%
	High	3	9,4%
Ethnicity/Race	Non-Javanese	4	12,5%
	Javanese	28	87,5%
Socio-economics	Low	9	28,1%
	Medium	14	43,8%
	High	9	28,1%

From the samples obtained, the characteristics of children with eating difficulties were dominated by the female gender, namely 19 children (59.4%) than the male gender of 13 children (40.6%). Nutritional status in children with difficulty eating was found to be the highest number in children with good nutritional status 27 children (84.4%) then in undernourished children, five children (15.6%), and no children with more nutritional status were found. Children with difficulty eating in this study were found in children with exclusive breastfeeding, namely 27 children (84.4%) while children who were not exclusively breastfed were five children (15.6%).

The father's educational status was found to be one person classified as low education (18.8%), 31 people (96.9%) with a total of 32 working fathers (100%). Father's income classified as low was found to be 6 people (18.8%), medium income 17 people (53.1%), and high income 9 people (28.1%). The educational status of the mothers was found to be 3 people with low education (9.4%), 29 people with high education (90.6%) with mothers who did not work 17 people (53.1%), and mothers who worked 15 people (46.9%). Low mother income was 22 people (68.8%), medium income was 7 people (21.9%), and high income was 3 people (9.4%).

The characteristics of ethnicity and race in children with eating difficulties were found to be children with tribes outside Java in the amount of 4 children (12.5%) and 28 children of

Javanese ethnicity (87.5%). The low socioeconomic level of the family was found to be nine children (28.1%), a moderate or middle level of 14 children (43.8%), and a high socioeconomic level of 9 children (28.1%).

Table 3
Relationship between risk factors and feeding difficulties in children

No.	Risk Factors		Difficulty Eating				Total		Chi-square Test	
			Yes		No		f	%	P	Description
			f	%	f	%				
1	Oral Motor Disorder	No	11	8.0%	79	57.7%	90	65.7%	0.000	Significant
2	Speech Disorder	No	17	12.4%	96	70.1%	113	82.5%	0.000	Significant
		Yes	15	10.9%	9	6.6%	24	17.5%		

The results of bivariate analysis found that oral motor disorders and speech disorders were significant risk factors. Cross tabulation between oral motor impairment and feeding difficulties showed that infants with feeding difficulties were divided into 11 children without oral motor impairment and 21 children with oral motor impairment. Then, from children who did not have feeding difficulties, 79 children did not have oral motor disorders and 26 children had oral motor disorders. The results of the chi-square test showed that there was a significant relationship between oral motor impairment factors and feeding difficulties in children ($p < 0.05$).

Cross tabulation between speech impairment and eating difficulties obtained the results that children who experience eating difficulties are divided into 17 children who do not have speech disorders and 15 children who have speech disorders, then children who do not experience eating difficulties are divided into 96 children who do not have speech disorders and 9 children have speech disorders. The results of the chi-square test show that there is a significant relationship between the factor of speech disorders and eating difficulties in children ($p < 0.05$).

DISCUSSION

Based on the results of the study, the characteristics of the study subjects were that girls at the age of 6-60 months experience more eating difficulties than boys of that age. This is inversely proportional to research conducted by (Soedibyo & Mulyani, 2016) where children with male gender were 54% compared to women at 46%. Also, the age group that experienced the most eating difficulties in children was at the age of 12-60 months.

The study found that 84.4% of children with eating difficulties were well-nourished children. This is by research conducted by Dian in Bandar Lampung where no significant relationship was found between the behavior of difficult eating in children and the nutritional status of children, especially in pre-school children. Another study conducted by (Van der Horst, 2012), in children 12-48 months found that children with feeding difficulties tend to weight the average age or underweight compared to children who do not have feeding difficulties (Judarwanto, 2008).

In this study, it was found that children with feeding difficulties were dominant in children with exclusive breastfeeding. This is inversely proportional to a cohort study conducted by Specht in 2018 in Europe that children who were breastfed until 4-5 months of age were more likely to have no problems with feeding difficulties in children than children who were breastfed until only 0-1 month of age regardless of the mother's education level. However, this study is in line with research conducted by Fitria Wahyu on preschool children in Pasuruan that there is no relationship between exclusive breastfeeding history and the occurrence of difficulty eating in children, especially preschool children (Specht et al., 2018).

The education of fathers and mothers who have children with difficulty eating is dominantly a high level of education ranging from high school to college. This is in line with Fitriyanti's research in 2018 which concluded that there is no relationship between parents' education level and eating difficulties in children. Meanwhile, in research conducted by (Steinsbekk et al., 2017) in Norway, the parenting role is an important factor that can reduce the risk of children having difficulty eating. It can be assumed that the level of education of parents does not guarantee that parents can have good or appropriate parenting to children. The income level and socioeconomic level of parents of children with eating difficulties in this study were dominated by fathers who worked with moderate income, mothers who did not work, and families with moderate or middle socioeconomic levels. In a study conducted by Riyadi in 2011, it was said that there was a relationship between parental employment and family socioeconomic level with eating difficulties in children. It was also stated by the Ministry of Social Affairs of the Republic of Indonesia in 2012 that families with high socioeconomic levels will have easier access to food diversity that can shape certain eating patterns (Riyadi et al., 2011).

In the risk factors studied, there was a significant association between oral motor disorders and speech disorders in children with feeding difficulties in children. Based on other studies, picky eaters tend to have oral motor disorders (Carruth et al., 1998). This is due to the child's inability to chew or process food with a certain texture (Sabilah et al., 2016). Oral motor disorders can be included in eating process disorders, starting from inserting food in the mouth, chewing, and swallowing. Skills and coordination abilities of gross motor movements around the mouth play a role in the eating process. Motor movements in the form of coordination of biting, chewing, and swallowing movements are carried out by muscles in the upper and lower jaw, lips, tongue, and many other muscles around the mouth. Disorders of the eating process in the mouth called oral motor disorders are often in the form of chewing disorders. This is why children can only drink milk and cannot eat other types of food (Judarwanto, 2009). Other research suggests that children with eating aversions or picky eaters choose foods because of their difficulty in chewing foods such as meat and vegetables. This may lead to speech delay (Chatoor et al., 2000). Adams-Chapman stated in her research that children who have a history of difficulty eating at the age of 18-22 months tend to experience speech and language delays. This is also corroborated by Putnick where difficulty eating in children can be an indicator of growth and development problems including speech and language skills (Adams-Chapman et al., 2013).

CONCLUSION

This study shows that there are dominant characteristics in children with feeding difficulties at the age of 6-60 months. Speech disorders and oral motor disorders in children can be a risk factor in the occurrence of feeding difficulties in children. Considering that oral motor disorders are one of the main risk factors for eating difficulties in children, it is necessary to conduct long-term prospective studies, especially in observing more risk factors and early intervention on these various risk factors to optimize children's eating ability. Considering that the growth and development of children are influenced by food intake, it is very important to conduct further research on the possibility of other risk factors for eating difficulties in children as a step to add to the repertoire of science.

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Audi Yudhasmara¹, Asrini Kaninta Adani², Ida Narulita Dewi³, Widodo Judarwanto⁴, Sandiaz Yudhasmara⁵ (2023)

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