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## Effectiveness of a nutrition education of gotu kola (*Centella asiatica*) as meals and nutritional health by mothers of young children with picky eating behaviour

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### Abstract

**Background:** The incidence of stunting in Indonesia is still high with a prevalence of 21.6% in 2022. Stunting causes adverse effects both short and long term, one of the causes of stunting is picky eaters. Gotu kola (*Centella asiatica*) food processing is one of the efforts to deal with picky eaters.

**Purpose:** To find out the relationship between giving gotu kola (*centella asiatica*) as an additional food and nutritional health by mothers of young children with picky eating behavior.

**Method:** A pre-experimental study with one group pretest post-test design. The study was conducted at Mathla'ul Huda Kindergarten, Baleendah District, Bandung Regency, Indonesia in April – June 2023. The samples in this study were mothers and toddlers aged 3-6 years totaling 30 people with total sampling techniques. The research was carried out by conducting a pretest, then providing health education interventions on *Centella asiatica* food processing innovations as an effort to overcome picky eaters, then after 4 days a post test was carried out. The research instrument is a questionnaire. Data analysis was carried out univariate and bivariate using the Spearman Rank test.

**Results:** The results of the analysis show that there is a significant difference between the results before and after the intervention with a p-value of 0.000 so that there is a relationship between healthy food innovation based on *Centella asiatica* in children aged 3-6 years and picky eaters.

**Conclusion:** It is recommended that parents better understand children's eating behavior, especially children with picky eater behavior, and must provide food intake that is appropriate to the child's needs and age so that the child gets adequate nutrition.

**Keywords:** Child's appetite; Gotu kola (*Centella asiatica*); Picky Eater.

### INTRODUCTION

Nutrition is the basic food necessary for body growth and health. Food is a very important need for every living person, whether babies, children, teenagers or the elderly, and they need food to survive. Nutrition also plays an important role in children's growth and development, because children need nutrition to grow. The problem of food nutrition is a complex problem. Improving nutritional quality includes: First, improving food consumption patterns

by following a balanced diet. Second, increase people's nutritional awareness, physical activity and health status. Third, improve access and quality of nutrition services in line with advances in science and technology. Fourth, improve the food and nutrition awareness system (Abdullah, Isir, & Fabanyo, 2022).

Appetite is a complex problem that occurs in every toddler and child. However, this is often

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experienced by toddlers and children who are growing. Appetite is the desire to eat food, feeling hungry and liking certain foods. The growth and development of toddlers is something that needs great attention. This is because toddlerhood is a period of very rapid and critical growth, usually known as the golden age. Children under five will experience growth and development, especially in language, cognitive and emotional functions. To support growth and development, nutritional intake from food is one factor which plays an important role for a child (Horne, & Perretty, 2008). Modifying the presentation of food is one way to attract toddlers to increase their appetite by having the most attractive colors or cute shapes possible to increase the child's appetite. Modifying food presentation can also influence changes in appetite in toddlers. So it is necessary to create food that is unique and as attractive as possible which can be of interest/pleasure for toddlers to increase appetite (Ellis, Zickgraf, Galloway, Essayli, & Whited, 2018).

Picky eater is an attitude of picky eating which is one form of eating difficulties in children where children only want the food they want (Arisandi, 2019). Picky eater is an eating disorder in children that must be handled by family or health workers because picky eater is bad for children (Lestari, Simanjuntak, & Suryani, 2019). One of the efforts that can be done as a preventive measure against stunting is to reduce picky eater behavior where parents can prepare food for family members with balanced and diverse nutrition, so that children can consume more varied foods with an attractive appearance for children to eat (Ministry of Health of the Republic of Indonesia, 2018).

Gotu kola (*Centella asiatica*) is a plant that is widely used as a traditional medicine to cure various diseases. *Centella asiatica* contains the active ingredients alkaloids, saponins, tannins, flavonoids, steroids and triterpenoids. Three groups of bioactives, namely triterpenoids, steroids and saponins, are antioxidants that are beneficial for the health of the human body. This active ingredient is a raw material for traditional medicine which is efficacious as antisenyl, antistress, medicine for neuropathy, fever, bronchitis, diabetes, psychoneurosis, hemorrhoids and high blood

pressure, as well as increasing appetite and maintaining vitality (Sutardi, 2016). Several studies that have been previously developed by other researchers include the use of home gardens as an effort to increase appetite, there are differences in the average nutritional intake of using gotu kola in toddlers (Luthfiya, 2022). Development of processed *Centella asiatica* leaf products as Additional Staple Food/MPT to improve the economy (Alwi, Firgiyanto, Elfina, Antika, Masyaroh, Dewindawati, & Triwidiarto, 2023).

## RESEARCH METHOD

This research is quantitative research with a pre-experimental method with a one group pre-test post-test design approach. The research was conducted at Mathla'ul Huda Kindergarten, Baleendah District, Bandung Regency, Indonesia in April – June 2023. Demographic data in Baleendah District shows a population of 3578 children under five. The sample size obtained was 350 and the cluster random sampling technique showed that 30 samples could be obtained. used which indicates inclusion criteria include the average height of the child. The samples in this study were mothers and toddlers aged 3-6 years and the exclusion criteria were children who were sick at the time the research was conducted.

Indicators of a picky eater can be seen from: eating in small portions, the menu is according to what he likes, sometimes switching food to snacks, the snacks eaten are not appetizing and do not meet nutritional standards, the child's weight is less than the normal average (tends to be thin). Meanwhile, not being a picky eater can be seen from: eating large portions, varied food menu, balanced staple foods and snacks, food menu according to nutritional standards, normal average child weight. Indicators of high appetite in children can be seen from regular meal times, portion sizes with balanced nutrition, and sufficient physical activity. Meanwhile, indicators of low appetite in children are children who drink formula milk too often and eat sweet snacks such as chocolate so that the child gets full quickly, lacks physical activity and irregular meal times.

The research was carried out by conducting a pre-test, then providing health education interventions on Gotu Kola (*Centella asiatica*) food

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processing innovations as an effort to overcome picky eaters. The gotu kola education was carried out for 50 minutes, all material was provided based on the action plan, the audience was very enthusiastic about asking questions and received good responses. Increased knowledge can be measured by pre and post tests. After 4 days a post test was carried out. Measuring changes in children's appetite using a questionnaire with a Likert scale. Pearson product moment correlation was used to

test the validity of the questionnaire with a result of 0.361.

Then, to test the reliability of the questionnaire, Cronbach's Alpha value was used with results > 0.700. Data analysis was carried out univariate and bivariate. Hypothesis testing in this research uses the Spearman Rank test. This research has received approval from the Health Research Ethics Committee of the Bandung Ministry of Health Polytechnic with number 04/KEPK/EC/X/2023.

**RESEARCH RESULTS**

**Tabel 1. Distribution of Participants (N=30)**

Variable	Results
<b>Characteristics of Toddler</b>	
<b>Age (Mean±SD)(Range)(Years)</b>	(4.4±1.02)(3-6)
3-4 Years	15/50.0
4 Years old 1 month - 6 Years	15/50.0
<b>Gender (n/%)</b>	
Male	2/6.7
Female	28/93.3
<b>Weight (n/%)</b>	
11-20 Kg	25/83.3
21-30 Kg	5/16.7
<b>Height (n/%)</b>	
< 100 cm	8/26.7
≥ 100 cm	22/73.3
<b>Picky Eater Behaviour</b>	
Picky Eater	12/40.0
Not Picky Eater	18/60.0
<b>Characteristics of Mother</b>	
<b>Age (Mean±SD)(Range)(Years)</b>	(32.3±8.9)(19-45)
<20 Years	3/10.0
20-29 years	9/30.0
30-39 Years	10/33.3
≥ 40 years	8/26.7
<b>Education (n/%)</b>	
Senior High School	19/63.3
University	11/36.7
<b>Employment (n/%)</b>	
Housewife	22/73.3
Government Employees	4/13.3
Employees	4/13.4

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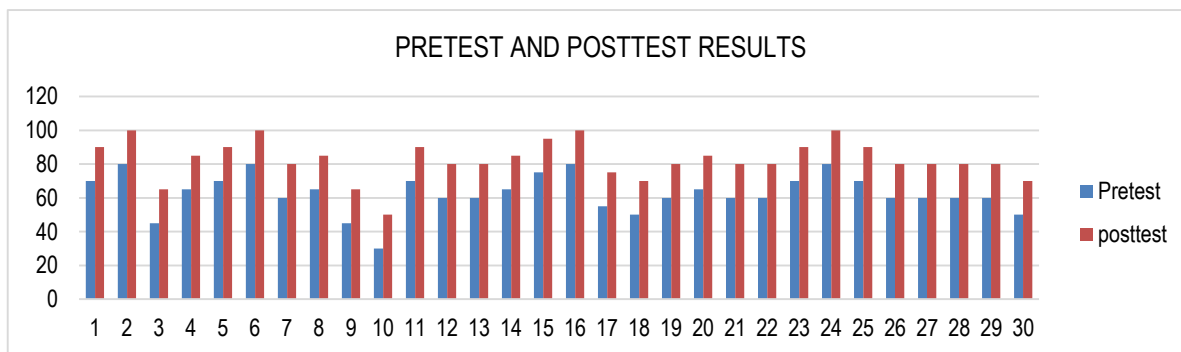
Based on the table, the average age of children is 4.4 with a standard deviation of 1.02 years, the age range of the youngest respondent is 3 years and the oldest is 6 years, participants consisted of 50.0% female toddlers and 50.0% male toddlers. Then based on age, almost all participants aged between 5-6 years, which is around 93.3%. When viewed from their height, most participants have a height of more than 100 cm, which is 73.3%, while when viewed from their weight, most participants weigh between 11-20 kg, which is 83.3%.

Based on the table, the mean maternal age was 32.3 years, and the standard deviation was 8.9 years. The youngest age is 19 years and the oldest is 45 years. The majority of mothers' education was senior high school, namely 19 participants (63.3%) and the majority of mothers' occupation was housewife, namely 22 participants (73.3%).

**Tabel 2. Correlation Analysis of Picky Eater Behavior With Changes in Toddlers' Appetite**

Variable	Respondent Account	Pretest (%)	Posttest (%)	Normality Test (p-value)	Correlation test Spearman rank (sig 2-tailed)	Correlation Coefficient	Conclusion
<b>Appetite</b>							
Low	7/23.3			0.003	0.000	0.676	There is a Relationship
High	23/76.7						
<b>Picky Eater Behaviour</b>		62.7	82.7				
Picky Eater	12/40.0			0.003			
Not Picky Eater	18/60.0						

The research results show that most children aged 3-6 years have a high appetite, namely 76.7%. Then, if we look at picky eater behavior, the majority of children show picky eater behavior, namely 40%. The data normality test shows that the data is not normally distributed (p value 0.000). The results of bivariate analysis using the Spearman rank correlation test obtained a p-value of 0.000 with a correlation coefficient of 0.676, which means there is a relationship between picky eater behavior and children's appetite with a strong correlation strength.



**Grafik 1. Analysis Pre Test and Post Test Results**

From the chart above, the average pre-test results showed 62.7% while the average post-test showed 82.7%. So that there is an increase in knowledge by 20% in all participants. The analysis of the difference between pre-test and post-test results

showed a significant difference between the results before and after the intervention with a p-value of 0.000. The relationship between Gotu kola-based healthy food innovation (*Centella asiatica*) with the average test results of participants' scores showed

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significant results with a p-value of 0.000 which could mean there is a relationship between healthy food innovations based on *Centella asiatica* in increasing children's appetite in children < 6 years old and picky eaters.

## DISCUSSION

The results showed that most children aged 3-6 years did not have picky eater behavior (60%) and were not stunted (76.7%). The results of the analysis of the relationship between picky eater behavior and appetite in children aged 3-6 years using the Spearman rank correlation test obtained a p-value of 0.000 with a correlation coefficient of 0.676, which means there is a relationship between picky eater behavior and children's appetite with a strong correlation strength.

Very appetite related to the nutritional status of toddlers because in Toddlers have an appetite that changes depending on the condition of the food. The condition of the food in question is that can attract toddlers to like it consuming a variety of foods, especially food that can influence the growth and development of the toddler. Lust Decreased eating can also slow down status health of toddlers. Appetite can be seen from food intake less than required will cause the body to become thin and susceptible to disease. Appetite in children Toddlers often change depending on what they do from the condition of the parents serving the food the toddler (Pittler, Schmidt, & Ernst, 2005). Appetite is the desire to eat. Appetite is influenced by various internal and external factors including mood, physical health, mental health, and the surrounding environment. Certain health conditions, such as cancer, depression, and anorexia, can cause loss of appetite. Factors that influence appetite include the senses (such as smell and taste), lifestyle, mental health, physical health, mood disorders, and the environment around a person (Steinsbekk, Bonneville-Roussy, Fildes, Llewellyn, & Wichstrøm, 2017).

Children with picky eater behavior most often show what they like compared to what they don't like, as do adults. The habit of having difficulty eating in children if it occurs over a long period of time can cause nutritional problems, especially hampering the

child's growth and development (Taylor, Northstone, Wernimont, & Emmett, 2016). Parents, especially mothers, have a very big role in nurturing and regulating children's diets, and ensuring that their children get adequate nutritional intake from the food they consume (Mahmood, Flores, Moreno, Manios, & Gonzalez, 2021). Parents must regulate children's eating behavior, for example if the child often consumes snacks, or sweet foods / drinks, or foods that are considered unhealthy, then parents need to change their diet to prevent obesity or malnutrition in children. Therefore, parents need to instill the importance of a healthy diet and food regarding what children can and cannot consume and should not be consumed early, so that in the future children do not consume unhealthy foods (Pebruanti, 2022).

From the research results, a relationship strength value was also obtained of 0.676, which means strong and positive, so it can be interpreted that the incidence of picky eaters is directly related to the child's appetite. The higher the incidence of picky eaters, the lower the child's appetite. Children with picky eater behavior tend to be short in stature and experience poor nutrition compared to children who do not have picky eater behavior (Chao, 2018). The research results also showed that the pretest average was 62.7% while the posttest average was 82.7%. So there was an increase in knowledge of 20% for all participants. The difference in pre-test and post-test results shows that there is a significant difference between the results before and after the intervention with a p-value of 0.000. The correlation between healthy food innovation based on gotu kola (*Centella asiatica*) and the average test results of participants showed significant results with a p-value of 0.000. This can be interpreted as a link between healthy food innovations based on *Centella asiatica* in increasing appetite in children < 6 years old and picky eaters.

Gotu kola (*Centella asiatica*) is a traditional plant that is widely used to cure various diseases, gotu kola can also increase appetite. Pegegan can increase the body height of zebrafish larvae by increasing BDNF expression (Ridlayanti, Nurlatifah, & Lusiani, 2021). *Centella asiatica* can reduce the expression of Bax and HsP 60 which cause free radicals so that it can increase the body length of

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zebrafish larvae that are stunted due to exposure to rotenone (Wijayanti, Ridlayanti, & Ali, 2021). Gotu kola (*Centella asiatica*) contains active ingredients alkaloids, saponins, tannins, flavonoids, steroids and triterpenoids. Three groups of bioactive, namely triterpenoids, steroids, and saponins include antioxidants that are beneficial to the health of the human body (Lisiwanti, & Fiskasari, 2017). This active ingredient functions as an anti-dimensional, anti-stress, neuroweak drug, anti-pyretic, anti-inflammatory, anti-hypertensive, anti-emetic, maintains vitality and can increase appetite (Sutardi, 2016). Empowering parents in preparing healthy food made from *Centella asiatica* can increase children's appetite (Fatmawati, 2021). *Centella asiatica* is a food ingredient that is easily cultivated by the public. Utilizing home gardens is an effort to increase children's appetite, which shows the average nutritional intake of children under five whose yards are used to grow healthy and natural plants (Luthfiya, 2022). The development of processed pegagan leaf products as healthy PMT for toddlers which can be useful in increasing children's appetite and improving the economy is also continuing to be developed (Alwi et al., 2023; Ridlayanti et al., 2021).

## CONCLUSION

The results of the research can be concluded that there is a significant relationship between picky eater behavior and children's appetite. For parents, researchers suggest that they better understand children's eating behavior, especially children with picky eater behavior and must provide food intake that is appropriate to the child's needs and age so that the child gets adequate nutrition.

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