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Olive Oil Towards Toddlers' Weight Gain

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ABSTRACT

Background : Children's growth is influenced by several things, one of them is the nutritional intake of the food they consume. When the child has received MPASI, the composition in it must be in accordance with the recommendations from IDAI. That is the proportion for carbohydrates as much as 35-55%, protein which is preferably animal protein as much as 15-20%, fat as much as 35-60%, and fruit or vegetables only as an introduction. **Objective**: the effect of giving olive oil on the weight gain of toddlers. *Methodology*: This research is a type of descriptive research. The subjects of the research were toddlers aged 6-24 months in Kemiri Kebakkramat Karanganyar. The total population in this study was 109 people with 15 people as samples. This research was conducted in March-June 2021. Results: Most of the respondents gave olive oil to their child every day as much as 86.6%. Most of children who consumed olive oil daily experienced an 80% weight gain increasment. Conclusion: Giving olive oil as fat in the composition of MPASI according to the portion of the dose has an effect on weight gain of toddlers.

INTRODUCTION

Toddlers are one of the assets in the family, the successor to the family and the nation's generation. There is a great hope from parents to raise the next generation into normal children both in their growth and development. There are various causes that make children lacking in growth and development, so that in the future they will experience delays or obstacles. If the problem of growth and development delays can be detected early, the child will be

Volume 20 Number 2, August 2022

protected from various growth and development problems such as stunting and can improve health status in the future.

Every child has diversity in their development growth and from the conception time to toddlerhood. In stages according to their age, children will experience stages of changes in their nutritional intake. Infants aged 0-6 months are required to get breast milk (ASI) (IDAI, 2018). Breast milk only is not sufficient to fulfill the nutritional needs of 6-24 months ISSN 1858-3385, E-ISSN 2549-7006 164



GASTER

https://jurnal.aiska-university.ac.id/index.php/gaster

infants, so additional food is needed in the form of breast milk complementary food (*MPASI*) which can be obtained from other food ingredients such as carbohydrates, vegetable proteins, animal proteins, fats and vegetables. Qualified MPASI will support the growth and development of toddlers, reducing the incidence of stunting (Kementerian Kesehatan RI, 2021).

The provision of complementary foods to infants aged 6-24 months has several effects. First. the mother's knowledge of how to give food with a schedule of giving 2 main meals a day at the age of 6-9 months and 3 main meals at the age of 9-24 months with an additional fruit variation between the main meal schedules. Second, proper parenting by not giving distractions while eating, as well as feeding patterns with details of 6-9 months of mashed food, 9-12 months of tender food, and 12-24 are family meals (Limardi et al., 2020).

Food given to infants and toddlers is closely related to social life, which in the choice of food menu is related to local cultural norms. Areas that are typical with a salty taste will serve or choose a menu with a salty taste dominant, and a spicy one will serve or choose a spicy menu. Feeding is also influenced by the number of children in the family, the more the number of children, the smaller the portion of food that will be distributed to children. It is related to the family economy. Qualitatively, there are several factors that influence the feeding of toddlers, including information/knowledge related to nutrition and food. The more the mothers of toddlers have knowledge about the nutrients contained in the food, the more qualified the food that will be given to their toddlers. The more families support the importance of nutrition in feeding toddlers, the more qualified the food will be given. The more reliable the source of information obtained, the better it will be in providing qualified food for toddlers, as well as mothers' perceptions of healthy food (Goldthorpe, J., Ali, N., & Calam, 2018).

The best source of food comes from local food available in the kitchen, farm or market which contains various needs in the toddler's body such as carbohydrate from rice, potatoes, corn, and cassava; protein from fish, tofu, tempeh, meat; fats from olive oil, margarine, soy, milk; and vegetables or fruit. The proportion for carbohydrates is 35-55%, protein which animal protein is prioritized as much as 15-20%, fat as much as 35-60%, and fruit or vegetables introduction are just an (Hanindita, 2020). In humans, the healthiest fat choices are olive, rapeseed and peanut oil which are also good sources of vitamins A,

Volume 20 Number 2, August 2022



https://jurnal.aiska-university.ac.id/index.php/gaster

D and E and can provide a balance of essential fatty acids from omega 3 and 6 (Bradford Teaching Hospitals NHS Foundation Trust, 2015).

Sour omega-3 unsaturated fat, plays role important in development a morphological, biochemical, and molecular of the brain and other organs. Deficiency fatty acids omega-3 caused by by insufficient intake or because presence of a disease that reduces power absorption, can inhibit development brain, physical health and interactions environment has a strong effect in the formation of development cognitive. Highly unsaturated fatty acids dominant in the arrangement of nerve cells in the child's brain. It is known that 60% The human brain consists of various types fats including non-fatty acids saturated it is: omega 3, EPA, DHA, omega 6, AA, omega 9. Fatty acids essential especially very important for normal growth and development fetus and baby, also for brain development and vision. In infants, fatty acid deficiency Omega-3 can cause inhibition of neuronal cell formation so the baby can be disabled, the quality low and the process of cell growth and development brain is not normal or below optimal (Asmi, 2018).

The proportion of fat in the diet of toddlers is still considered lacking, so it is

still found people who have not used fat in the toddler's diet. The fat itself can be in the form of oil, butter, and coconut milk. There are several kinds of oil on the market, but olive oil is one of the oils mentioned in the Quran as a medicine or a healer.

If the intake of fat from food is lacking, it will have an impact on the lack of calorie or energy intake for the body's activity and metabolism processes. Low fat intake followed by reduced energy in the body will cause changes in body mass and tissue as well as impaired absorption of fatsoluble vitamins. Fat is a macronutrient that functions as the largest energy contributor, protects organs in the body, dissolves vitamins and regulates body temperature (Adani & Nindya, 2017), (Ainun Nisa, 2022).

Posyandu subur is located in kemiri village, which is one of the working areas of the kebakkramat health center, karanganyar regency, which has a large area and has a large number of children under five compared to other sub-districts. According to the explanation of the health officer of the kebakkramat health center, there are still some toddlers who are underweight so that it is necessary to follow up on the incidence so that they are not late and become stunted.

METHODS AND MATERIALS



This research design uses а quantitative descriptive. The population used in this study were infants aged 6-24 months in the working area of the Kebakkramat I Health Center, namely 109 toddlers. The number of samples using purposive sampling technique with the inclusion criteria of underweight obtained 15 respondents.

This research was conducted in March-June 2021. The instrument of this research is an observation sheet (questionnaire) which is used to help researchers obtain data from respondents' statements. Furthermore, added from the information from interviews conducted, it was documented in writing and compiled.

RESULTS AND DISCUSSION

1. Characteristics of Respondents Based on the data obtained, it can be seen in the following table as the

characteristics of the respondents:

Table 1	Characteristics	of Toddlers	by Age
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Characteristics	F	%
Umur		
6-8 bulan	3	20
9-12 bulan	3	20
>12 bulan	9	60
Source Primar	v Data 20)22

Based on the table above, the characteristics of toddlers based on age show that there are 3 respondents for 6-8 months (20%), 3 respondents for 9-12 months (20%) and 9 respondents for >12 months (60%). So

it can be concluded that most of the respondents are >12 months old.

Table 2 Characteristics of Toddlers by

Ochid			
Characteristics	F	%	
Gender			
Male	11	73.3	
Female	4	26.6	
Source: Primary Data, 2022			

Based on the table above, the characteristics of toddlers by gender show that male respondents are 11 respondents (73.3%), and female respondents are 4 respondents (26.6%). So it can be concluded that the majority of respondents are male.

Table 3 Characteristics of Toddlers by
Frequency of Feeding

Characteristics	F	%
2x	2	13.3
3x	13	86.6
Source: Primary Data, 2022		

Based on the table above, the characteristics of toddlers based on the frequency of feeding show the frequency of 2x as many as 2 respondents (13.3%), and respondents with 3x feeding frequency as many as 13 respondents (86.6%). So it can be concluded that the majority of respondents are those who provide food with a frequency of 3 times a day.

Table 4 Characteristics of Toddlers based on

fluid intake				
Characteristics	F	%		
Breast Milk	10	66.6		
Formula Milk	5	33,3		

Source: Primary Data, 2022



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Based on the table above, the characteristics of toddlers based on fluid intake showed that 10 respondents were breastfed (66.6%), and 5 respondents were formula milk (33.3%). So it can be concluded that the majority of respondents consuming fluid intake in the form of breast milk.

Table 5 Characteristics of Toddlers based on sleeping quantity

F	%	
2	13.3	
13	86.6	
	F 2 13	

Based on the table above, the characteristics of toddlers based on the quantity of sleep show less than 12 hours a day as many as 2 respondents (13.3%), and respondents who sleep with 12-14 hours a day as many as 13 respondents (86.6%). So it can be concluded that the majority of respondents are those who sleep with a quantity of 12-14 hours a day.

2. The Relationship of Giving Olive Oil With Weight Gain In Infants / Toddlers Age 6-24 Months

Table 6 Relationship of giving olive oil with weight gain

Giving			W	eight		
Olive Oil	Incre	%	Stea	%	Total	%
	ase		dy			
Regularly	12	80	1	6.6	13	86.6
Non	0	0	2	13.3	2	13.3
Regularly						
	То	tal			15	100

Volume 20 Number 2, August 2022

Source: Primary Data, 2022

Based on table 6, it was found that respondents with regular giving of olive oil into complementary foods, most of their weight increased, as much as 12 respondents (80%), and respondents with non-regular giving of olive oil into complementary foods most of their weight did not increase, as much as 2 respondents (13.3%). The results of the analysis showed that the *p* value was 0.04 < 0.05, so there was a significant relationship between the giving of olive oil and the weight gain of toddlers in the Kebakkramat I Public Health Center Karanganyar.

DISCUSSION

Based on table 1 regarding the characteristics of toddlers by age, it shows that the majority of respondents are aged > 12 months. The toddlers aged from 12 months to 2 years is the most important stage of growth and development in a child's early life. The period called the golden age or the first 1000 days of a child's life is calculated from the time in the womb until the child reaches two years of age. It is important and needs to be considered, especially by parents or caregivers, so that the brain grows optimally, as well as physical growth.

Various problems can occur due to the lack of fulfilling the needs of children ISSN 1858-3385, E-ISSN 2549-7006 168





https://jurnal.aiska-university.ac.id/index.php/gaster

during the golden age, including cognitive disorders, stunting, as well as speech delays and behavioral disorders. So, it is important for parents to know each stage of their child's golden age and provide appropriate treatment and stimulation. The right treatment in providing nutrition at this age is needed because toddlers have started eating with a texture that can follow family food, no longer with a strained or mashed texture, or chopped (Hanindita, 2019).

The health benefits of olive oil have been attributed to its two main constituents: its high content of oleic acid (monounsaturated fatty acid, 18:1n-9) (70-85%) and a large number of antioxidant compounds, which also have antiviral, antibacterial properties, and immunomodulating effects. The polyphenols found in virgin olive oil are linked to their excellent taste and stability. The introduction of solid foods in infancy is one of the main things that parents often discuss with pediatricians. It is important to emphasize to parents the fundamental role that the Mediterranean diet and consumption of foods with olive oil play in a healthy lifestyle. Polish infant feeding guidelines recommend the use of olive oil, canola oil and butter in the first year of life (Hozyasz et al., 2010).

Based on table 2 regarding the characteristics of toddlers by gender, it shows that most of the respondents are male. Male toddlers have more opportunities for stunting than girls, because boys' gross motor development is faster and more diverse so they require more energy (Norma et al., 2015).

In table 3 about the characteristics of toddlers based on the frequency of eating the majority are those who eat with a frequency of 3x, which is 86.6%. It is done by parents who take care of their children with the assumption that toddlers already need a lot of energy in accordance with the energy needs that must be met in their daily lives, the older they are and the more motor skills the toddler has mastered, the frequency of eating is more than when he was introduced to MPASI. Diet is the way a person or group of people consumes as a reaction to physiological, psychological, cultural, and social influences (Catherine Georgina Russell, Jillian J. Haszard, Rachael W. Taylor, Anne-Louise M. Heath, Barry Taylor, 2018).

Based on the table 4 the characteristics of toddlers based on fluid intake show that respondents with breast milk intake are 10 people (66.6%), and respondents with formula milk intake are 5 people (33.3%). Breast milk is very



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important for the growth and development of infants and toddlers under 2 years, so that their nutritional needs are fulfilled. Although the need for breast milk for babies over 6 months is decreasing, the content that can be found in breast milk is still the best compared to others to support the growth of toddlers. The need for breast milk at the age of 6-8 months is 70% of breast milk and 30% of MPASI, age 9-11 months 50% of breast milk and 50% of MPASI, age 12-23 months 30% of breast milk and 70% of MPASI (Hanindita, 2020). Breast milk has advantages both in terms of nutrition, immune power, psychology, economy and so on (Ardiana et al., 2019).

Human breast milk is a complex matrix with a general composition of 87% water, 3.8% fat, 1.0% protein, and 7% lactose. The fat and lactose, respectively, provide 50% and 40% of the total energy of the milk. However, the composition of human breast milk is dynamic and changes over time, adapting itself to the changing needs of the growing child. For instance, during each nursing session, the milk that is expressed first (foremilk) is thinner with a higher content of lactose, which satisfies a baby's thirst, and following the foremilk, hindmilk, is creamier with a much higher content of fat for the baby's needs. Variations are also present with the stage of

nursing (age of infant), maternal diet, health. environmental maternal and exposure. During early lactation, the protein content in human milk ranges from 1.4-1.6 g/100 mL, to 0.8–1.0 g/100 mL after three to four months of lactation, to 0.7-0.8 g/100 mL after six months. The fat content varies significantly with maternal diet and is also positively related to weight gain during pregnancy. Remarkably, it has been observed that a mother's breast milk is almost always adequate in essential nutrients for her term infant's growth and development, even when her own nutrition is inadequate. Although the mean concentrations of protein, sodium, chloride and potassium in early preterm milk are adequate to meet the estimated requirements for preterm infants, specific nutritional supplementation is required for mother's milk delivered to preterm infants (Martin et al., 2016)

Fats are the most important composition of breast milk, supplying energy and helping the development of the central nervous system. Moreover, milk fat is a carrier of taste and aroma. In general, human breast milk fat content ranges from 3.5% to 4.5% during lactation. The main lipid fraction are triglycerides, which account for about 95% of total lipids. Near half of milk fatty acids are saturated fatty



https://jurnal.aiska-university.ac.id/index.php/gaster

acids, with 23% palmitic acid (C16:0) in total fatty acids. The monounsaturated fatty acid, oleic acid (18:1w9), is in the highest percentage (36%) in milk. Human breast milk also contains two essential fatty acids, linoleic acid (C18:2w6) at 15% and alphalinolenic acid (C18:3w3) at 0.35%. These two essential fatty acids are, respectively, to arachidonic converted acid (AA, C20:4w6) and eicosapentaenoic acid (EPA, C20:5w3), the latter of which is further converted to docosahexaenoic acid (DHA, 22:6w3). AA, EPA and DHA are important for regulating growth, inflammatory responses, immune function. vision. cognitive development and motor systems in newborns (Guo, 2020)

On table 5 the characteristics of toddlers based on the quantity of sleep it is found that most toddlers sleep 12-14 hours a day as much as 86.6%. Sleep is a state of altered consciousness when the individual's perception and reaction to the environment decreases (Catherine Georgina Russell, Jillian J. Haszard, Rachael W. Taylor, Anne-Louise M. Heath, Barry Taylor, 2018). (Potter Patricia A, 2005) argues that during sleep, NREM is beneficial in maintaining heart function and during sleep the lowwave ,which is in stage IV NREM, the body releases human growth hormone to repair and renew epithelial and particular cells such as brain cells. In addition, the body stores energy during sleep and a decrease in the basal metabolic rate saves the body's energy supply. From the information above, it can be concluded that toddlers who get sufficient quantity of sleep according to their age stages will also get sufficient NREM sleep, so that they can release growth hormones, one of which is to increase the toddler's weight (Maukina, R., & Wijayanti, 2018).

Table 6 shows that based on the weight of toddlers with status of 'increased', most of them have been given olive oil regularly. As for the weight of toddlers whose status does not increase is by giving olive oil on a non-regular basis.

From the statistical test it is obtained p value 0.04 < 0.05 which indicates that there is a relationship between the giving of olive oil and weight gain in toddlers who are checked using a scale in the area of the Kebakkramat I Health Center. Several studies have stated that the critical phase of the incidence of malnutrition is the transition from breast milk to complementary foods, so parents or caregivers of babies or toddlers must know the right way to provide optimal nutrition in complementary foods. The right choice of complementary foods is the food that can meet the nutritional needs of children under 2 years old, namely macronutrients micronutrients. and

Volume 20 Number 2, August 2022



https://jurnal.aiska-university.ac.id/index.php/gaster



Macronutrients are obtained from carbohydrates, fats and proteins, while micronutrients are obtained from vitamins and minerals (Hanindita, 2019).

Giving food to infants or toddlers should be given when breast milk is no longer able to meet the nutritional needs of babies because the baby's needs have increased, namely at the age of 6 months. The strategy for giving good complementary foods is on time, adequate, safe and responsive. The MPASI provided must contains complete and balanced nutrition, including in terms of quantity, frequency, consistency and variety of food. Mothers in the area of the Kebakkramat I Health Center provide meals with a frequency of 3 times a day to the according frequency recommended by the Indonesian Pediatrician Association according to their age. Adequate composition contains of carbohydrates, protein, fat and fruit or vegetables.

The proportion for carbohydrates is 35-55%, animal protein is preferred as much as 15-20%, fat is 35-60%, and fruit or vegetables are just an introduction. Fat is a source of energy and a source of essential fatty acids which are very important for brain growth and development (Hanindita, 2020).

Olive oil is one of the sources of fat that is easily found in the public. The nutritional composition of olive oil contains 11 grams of fat in every 100 grams of olive oil. Giving 1 ml or 1 teaspoon to each food serving that is mixed directly or used for sauteing spices is sufficient for the recommended 35-60% fat requirement. According to (Cidadapi, 2016) from the results of research from the University of Barcelona, Spain in 1996 said that the content of single-chain fat in breast milk is the same type as that contained in olive oil so that the fat from olive oil is easily absorbed by babies or toddlers. According to HR. Al-Baikhaki and Ibn Majah, narrated by Abdullah bin Umar that Rasulullah SAW said: "Eat olive oil (as a side dish of bread) and oil it (head hair) with it, for indeed it is a tree with many blessings." So as Muslims, apart from getting the benefits of olive oil as a fat for the growth of babies and toddlers to be maximized, namely increasing weight, they also get blessings from what they eat.

Fat has a major role to provide metabolic energy, the product of fat metabolism can be in the form of fatty acids. Fatty acids can be divided into saturated fatty acids and unsaturated fatty acids. Baby growth requires unsaturated fatty acids such as Docosahexaenoic acid (DHA) and Arachidonic acid (AA). AA and DHA are very important long-chain unsaturated fatty acids derived from lipid membranes and are



https://jurnal.aiska-university.ac.id/index.php/gaster



very useful for the growth and development of infants. Baby's growth is very dependent on the results of the body's metabolism which is transferred through breast milk to meet the nutritional needs of the baby to grow and develop so that the baby can grow optimally (Ardi, 2019), (Heath et al., 2022).

CONCLUSIONS AND

RECOMMENDATIONS

The provision of olive oil as fat in the composition of complementary foods according to the proportion has an effect on Adani, F. Y., & Nindya, T. S. (2017). Perbedaan Asupan Energi, Protein, Zink, dan Perkembangan pada Balita Stunting dan non Stunting. *Amerta Nutrition*, *1*(2), 46. https://doi.org/10.20473/amnt.v1i2.622 5

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weight gain of toddlers. It is expected that mothers of infants and toddlers provide olive oil as fat according to the dose in their complementary foods. And it is hoped that it can be taken into consideration for related midwives in providing education about giving olive oil to toddler food in order to increase the weight of toddlers who have received complementary foods to avoid stunting.

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Volume 20 Number 2, August 2022





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