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The Influence of Consuming Honey on The Eating Frequency of Children Under Five Years (3-5 Years)

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ABSTRACT

Background: Children under five (0-5 years) have a very high level of brain plasticity so they will be more open to learning and enrichment processes. A study in Jakarta found that preschool children aged 4-6 years have a prevalence of eating difficulties of 33.6% and most of them (79.2 have lasted more than 3 months.

Purpose: To determine the influence of consuming honey on eating frequency in children aged 3-5 years.

Method: This pre-experimental study used one group pretest-posttest design. This study involved 34 children aged 3-5 years determined using the simple random sampling technique. The variable measured was the consumption of honey as the independent variable, while the dependent variable was the frequency of eating before and after consuming honey. The statistical test used in this study was the Wilcoxon statistical test with a 95% confidence level ($\alpha = 0.05$). The Statistic Analyses used to SPSS V.26.

Results: The results showed that 26 children (76.5%) ate less than three times a day before consuming honey and 18 children (52.9%) have a frequency of eating more than three times a day after consuming honey.. The result of the bivariate test was 0.000 which is lower than 0.05.

Conclusion: Consuming honey influence the frequency of eating of children aged 3-5 years. It is expected that the results of this study can enrich knowledge on the benefits of honey so that respondents can better understand and apply it at home to their children.

Keywords: *eating frequency of children under five, consuming honey*

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BACKGROUND

For healthy babies and children, eating is a simple daily routine of consuming food by putting food into the mouth and swallowing it as it is the source of necessary nutrients. Considering child nutrition, foods are efforts to meet the individual needs various kinds of nutrients for metabolic needs to maintain life, health, and for growth and development (Hills et al., 2019). Besides, children learn about things related to eating, including eating schedules. Regular eating is needed to build habits in the digestive tract so that they are better prepared to receive, digest and absorb food at certain times (Abdulwahid et al., 2012)

The number of children under five who were malnourished based on the results of the 2013 Basic Health Research was 19.6% (compared to the National Medium Term Development Plan target of 15% in 2014). Compared to 2010, there was an increase. A survey in Central Java in 2013 showed 19.1 % of 2,985,934 children experienced eating difficulties (World Health Organisation, 2016).

This eating difficulty was experienced by around 25% of children of term birth and the number will increase by around 40-70% in children of pre-term birth or with chronic diseases (World Health Organization/United Nations Children's Fund, 2014).

A study in Jakarta found that in preschool children aged 4-6 years, the prevalence of eating difficulties reached 33.6% and most of them (79.2%) lasted more than 3 months (World Health Organization, 2022). A preliminary study conducted in June at the Amanah Husada Inpatient Primary Clinic showed that out of 34 children aged 3-5 years, 22 children have a frequency of eating twice a day; 8 children have a frequency of eating three times a day; and 4 children have a frequency of eating once a day.

Inadequate nutrition fulfillment due to decreased appetite in children will interfere with their growth and development process. A decrease in appetite for a long time will result in malnutrition. The malnutrition will result in a decrease in the immune system so that children very easy to get infections (Münstedt et al., 2020).

The solution is to revive the appetite for food so to ensure the fulfillment of nutrition. Honey can stimulate appetite in children which is expected to overcome complaints of decreased appetite in children (Aamotsmo & Bugge, 2016; Health & Welfare, 2020).

Honey has been widely known for a long time. In ancient life, honey was used in preserving corpses in ancient Egypt and was found in papyrus around 1900-1259 BC (Boca et al., 2016; Utami & Luthfiana, 2018). Honey produced by bees comes from nectar plant secretions and excretion. The Food Standard defines honey as plant exudation in the form of nectar and sugar collected, modified, and stored by honey-producing bees. British Pharmacopoeia (1993) defines pure honey as the result of the purification of honey that comes from beehives. Honey is sweeter than sugar (sucrose) due to the presence of fructose, glucose, and sucrose (Maulida et al., 2013).

The main nutritional content of honey is carbohydrate compounds such as fructose (41.0%), glucose (35%), sucrose (1.9%), and dextrin (1.5%). Honey carbohydrates add to the supply of some of the energy needed by children under five. The protein content in honey is relatively small, namely 2.6%.

Honey works optimally when used properly and not excessively. Giving excess honey will result in high glucose levels in the blood. Honey also has good glucose levels for the nervous system in the intestine to convey hunger and satiety responses to the eating process in humans (Dalwood et al., 2020).

Based on the explanation above, this study aims to examine the influence of consuming honey on the frequency of eating of children aged 3-5 years at an Inpatient Primary Clinic in Gunungkidul. The results of this study can be applied in everyday life to overcome eating difficulties in children under five (Omaghomi et al., 2016).

OBJECTIVE

The main objective of this study was to determine the effect of consuming honey on eating frequency in children aged 3-5 years at a Primary Clinic in Gunungkidul.

METHODS

The study design was a pre-experiment research. This research used one group pre-test and post-test design. Based on research objectives, it is a comparative analysis between research variables. This study used primary data.

This study was conducted at a Primary Clinic in Gunungkidul. The population of this study was all children under five in Inpatient Primary Clinic in Gunungkidul. The sample size was obtained using the Frederer's formula in which the sample size was 34 respondents (a group) . Respondents consume pure honey at a rate of 15 grams/ ½ tablespoon/ 1 teaspoon every drink in a week. The determination of the sample used a simple random sampling technique in which each member of the population has the same opportunity to be selected as a sample.

The instrument used to collect data were an observation sheet containing statements about the development of eating frequency in children under five and the regularity of respondents in consuming honey. The data were also collected from interviews using interview guidelines. Data were processed through editing, coding, scoring, and tabulating.

The data were analyzed using 2 methods, namely univariate and bivariate. Univariate analysis analyzed the frequency of eating before and after consuming honey and the results were presented in the form of a frequency distribution table. Bivariate analysis was carried out to differentiate the frequency of eating before and after consuming honey using the Willcoxon statistical test with an error level of 5%. The results of the analysis showed that the value of the test statistic is higher than the table or the significance level value is $(p) < \alpha$, $\alpha = 0.05$.

RESULTS

Table 1.1 Frequency distribution of respondents based on the age group of children in Primary Clinic in 2017

Age	Frequency	Percentage
3 years	18	52.9
4 years	11	32.4
5 years	5	14.7
Total	34	100

Source: Primary research data, 2016

Based on the table above, the majority of respondents (18 children or 52.9%) aged 3 years.

Table 1.2 Frequency distribution of respondents based on eating frequency before consuming honey in Primary Clinic in 2017

Eating frequency	Frequency	Percentage
One Time	4	11,8
Two Times	22	64,7
Three Times	8	23,5
Total	34	100

Source: Primary research data, 2016

Based on the table above, 26 children eat less than three times a day with a percentage of 76.5%.

Table 1.3 Frequency distribution of respondents based on eating frequency after consuming honey in Primary Clinic in 2017

Eating frequency	Frequency	Percentage
2	3	8.8
3	13	38.2
4	18	52.9
Total	34	100

Source: Primary research data, 2016

Based on the table above, 18 children have a frequency of eating of more than three times a day are 18 toddlers with a percentage of 52.9%.

The table above shows the cross-tabulation of the influence of honey consumption on toddler eating frequency in Primary Clinic in 2017.

Variable	Mean (SD)		P value
	Before n: 34	After n: 34	
Eat frequency	2.12 (0.59)	3.44 (0,67)	<0,05

Source: Primary research data, 2016

From baseline to a week follow up, the mean (SD) change in eat frequency was 2.12 (0.59) eat before consume pure honey and 3.44 (0.67) eat after consume of pure honey (mean between-before and after was difference, 1.22 eat in a day; 95% CI). For the primary outcome, the change in eat frequency from baseline to a week was significant difference increase before-after consume honey.

Identification of the frequency of eating before consuming honey in children aged 3-5 years in Primary Clinic in 2017 showed that before consuming honey, 26 children have a frequency of eating less than three times a day. Identification of eating frequency after consuming honey in children aged 3-5 years in Primary Clinic in 2017 showed that after consuming honey, 18 children have a frequency of eating more than three times a day.

Analysis of the influence of consuming honey on the eating frequency of children aged 3-5 years before and after consuming honey showed that out of 34 children, 26 children (76.5%) have an eating frequency of fewer than 3 times a day and 8 toddlers (23.5%) have a frequency of eating three times a day.

DISCUSSION

The findings demonstrate that consume pure honey provide eat frequency of toddler. Based on the results of the study, it was shown that before consuming honey the frequency of eating 34 toddlers was 26 toddlers with a frequency of eating less than 3 times a day.

The frequency of food consumption can be used as an estimate of the level of nutritional adequacy, meaning that the higher the frequency of food consumption, the greater the chance of fulfilling nutritional adequacy. An observation of children in western countries shows that the group of children whose frequency of food consumption is less than 4 times per day consumes energy, protein, vitamin C, and iron (Fe) lower than the average consumption of children who lifetime. Meanwhile, consumption in the group of children whose frequency of food consumption was more than 6 times per day was higher than the average consumption of children of the same age.

According to Lia Amalia cited by (Hills et al., 2019) the food portions for adults and toddlers are very much different, the food portion for toddlers is less because there are fewer essential nutritional needs that must be met. In addition, the characteristics of growth and activity are also different. The portion of food for children under five must have a water and fiber content that is in accordance with tolerance, the texture of the food is rather soft so that it is easily digested, giving a feeling of fullness

Based on the results of the study showed that after consuming honey the frequency of eating was 34 toddlers (3-5 years) there were 18 toddlers (3-5 years) with a frequency of eating more than 3 times a day. Toddlers are divided into two groups, namely toddlers aged one to three years and toddlers aged three to five years (Gosdin et al., 2018). At pre-school age children become active consumers. They can already choose the food they like. At this age children begin to associate with their environment or attend playgroup so that children experience some changes in behavior. (Negash et al., 2014) states that the frequency of food consumption per day is one aspect of eating habits. The frequency of food consumption in children, some are bound to a pattern of eating 3 times per day but many also consume food between 5 and 7 times per day or more. Honey was compose of several sugar molecules such as glucose and fructose as well as a number of minerals such as magnesium, potassium, potassium, sodium, chlorine, sulfur, iron and phosphate. Honey also contains vitamins B1, B2, C, B6, and B3, the composition of which varies according to the quality of flower honey and pollen consumed by bees. Besides that, in honey there is also copper, iodine and zinc in small amounts, as well as several types of hormones (Kang et al., 2018).

Based on the research results, it can be seen that out of 34 toddlers, there are 26 toddlers (76.5%) eating frequency less than 3 times a day and there are 8 toddlers (23.5%) eating frequency 3 times a day. This data shows that most of the frequency of eating toddlers before consuming honey is less than 3 times a day. Based on the results of the study it was found that out of 34 toddlers there were 18 toddlers (52.9%) eating more than 3 times a day, 13 toddlers (38.2%) eating 3 times a day and 3 toddlers (8.8%) with a frequency of eating less than 3 times a day. This data shows that most of the frequency of eating toddlers after consuming honey has changed. Childhood is a very important period for the process of human life. At this time it will have a major influence on the success of the child in the process of further development (Nicki, 2007). From the description above, it can be concluded that toddlers are individuals under five years of age. Growth at this time takes place quickly and slows down at preschool age. Meeting the daily needs of toddlers is still very dependent on other people. It is hoped that by

consuming honey the appetite of toddlers will increase because at pre-school age children become active consumers. They can already choose the food they like.

Natural honey also contains a lot of enzymes, namely very complex protein molecules produced by living cells and functions as a catalyst, namely: a substance that changes the speed of reactions in chemical processes that occur in the body of every living thing (Abdulwahid et al., 2012). Honey bees produce honey which is made from nectar during the flower season. When the nectar is collected by workers from flowers, the material still contains high water (80%) and also sucrose is converted to fructose and glucose (Girma & Genebo, 2002). The main acid in honey is glutamic acid. Meanwhile the organic acids contained in honey are acetic acid, butyric acid, formic acid, succinic acid, glycolic acid, malic, proglutamic, citric, and pyruvate. The main acid content contained in honey is glutamic acid and butyric acid which can stimulate to increase appetite. In influencing the activation of NYP and AGRP neurons, where NYP and AGRP stimulate arcuate neurons in the hypothalamus which function in increasing the frequency of eating.

CONCLUSION

Based on the results of the study, it can be concluded that before consuming honey, most children have a frequency of eating less than three times a day, after consuming honey, most children have a frequency of eating more than three times a day and there is an effect on the frequency of eating before and after consuming honey in children aged 3-5 years.

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