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EFFECTIVENESS OF BAGEA SAGO DATE CAKE AGAINST WEIGHT GAIN INFANTS AGED 6-12 MONTHS

Luciana Heidee, Mardiana Ahmad, A.Nilawati Usman, A.Wardihan Sinrang, M. Aryadi Arsyad, St. Raf'iah
Universitas Hasanuddin, Indonesia
Email: christiantylh20p@student.unhas.ac.id, mardianaahmad@pasca.unhas.ac.id, andinilawati@pasca.unhas.ac.id, wardihan@gmail.com, aryadi.arsyad@gmail.com, sittirafiahdr@yahoo.co.id

Abstract

Objective: This study aims to assess the effectiveness of giving Bagea Sago date cakes in increasing the weight of children aged 6-12 months. *Method*: The design of the study used queasy experiments with a pretest and post-test approach with a control group. The study sample was 40 babies aged 6-12 months. The samples were divided into two groups, namely the intervention group (20 children), who were given date Sago Bagea cakes and the control group (20 children) who were given Sago Bagea cakes. The research begins with weighing weight before the intervention is carried out. Purposive *sampling* according to predetermined criteria. The instrument used was in the form of a questionnaire used to assess the BB of the body of children aged 6-12 months as well as observation sheets to control the administration and ascertain whether respondents consumed the date Sago Bagea cake given. Data analysis using t paired test and t independent test. *Results*: In the mean±SD intervention group, the body weight before treatment was 7.6±0.995 kg, and after the intervention, there was a weight gain with a mean±SD of 8.36±0. 811 kg. For the control group, the mean±SD body weight before treatment was 7.36±1,140 kg, while at the time± of post±SD weight gain was 7. 48±1. 141 kg. The results of the bivariate analysis showed that there was a difference in body weight in the group that received the intervention in giving date Sago Bagea cake with a value of $p = 0.015 < 0.05$. *Conclusion:* Bagea Sago date cake can be used as an alternative to complementary breast milk (Makanan Pend besides breast milk) in children aged 6-12 months.

Keywords: Weight loss, Bagea Cake, Sago, Dates, Baby 6-12 months

Introduction

Malnutrition remains a critical public health problem among children under the age of five in developing countries (Maravilla, Betts, Adair, & Alati, 2020). Malnutrition is caused by several interrelated factors and has adverse short-term and long-term health effects (Vilcins, Sly, & Jagals, 2018). It affects the cognitive and physical development of children, increases the risk of infection and significantly contributes to the morbidity and mortality of the child (Maravilla et al., 2020).

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It is estimated that one in four children under the age of five fails to grow along the optimal trajectory set out in the World Health Organization's Child Growth Standards (3). This growth failure is known as stunting, a term given to linear growth disorders (length/height according to age) in the early years of life, resulting in failure to reach a height in adulthood implied by genetic potential (Ahmad, Arsin, Sirajuddin, & Syafar, 2020). Stunting is a manifestation of malnutrition and is a significant health problem. Global predictions show that one in five children will be stunted in 2020 (Rakotomanana, Gates, Hildebrand, & Stoecker, 2017). Stunting can result in negative health effects throughout the life span, such as life-threatening complications during childbirth, decreased performance and cognitive development, poorer school attendance, and decreased adult earning capacity (Vilcins et al., 2018).

Much evidence resulted from research that nutrition education for mothers of young children can significantly improve knowledge and improve optimal early childhood feeding practices, which is significantly associated with a lower prevalence of malnutrition among their children (de Onis & Branca, 2016). In fact, suboptimal feeding practices in childhood have been identified as one of the three main causes of child stunting in Asian countries (1): (7) (Bi, Haak, Gilbert, & Keller, 2017). Some studies report that maternal nutrition counselling is associated with increased infant and child feeding (PMT) reducing childhood growth problems (Fordham, Kumar, & Aamir, 2017).

Currently, many nutritional interventions aimed at improving child nutrition have been implemented. The Maternal and Child Nutrition Group showed that the promotion of appropriate complementary foods along with other supporting strategies including education and food supply groups is the most effective intervention to reduce stunting in children before the age of 36 months (Suriani, Sudirman, Mukarramah, Sabar, & Saleng, 2021). If the coverage with feeding interventions is combined with supporting activities to 99%, then it can be estimated a 19% reduction in the prevalence of stunting in infants at 12 months and 17.2% at 24 months of age. There is also a focus on stunting prevention approaches during the first 1,000 days as sufficiently supportive evidence that fetal growth, birth weight, and height-for-age at birth are associated with height trajectories during childhood (Arsyad, Syarif, Ahmad, & As'ad, 2020).

Method

This study is a *queasy experiment* with a pretest and post-test approach with a control group. The study sample was 40 infants aged 6-12 months (20 samples for the control group and 20 samples for the intervention group). The research site at the Wosi Health Center, Manokwari Regency, West Papua, for the period of February - April 2022. This research has received permission from the ethics committee of the Ministry of Education, Culture, Research and Technology, Hasanuddin University, Faculty of Public Health.

This research is an observational study with *a queasy experimental* design (*pre-post control design*), using *a consecutive sampling* technique. In the research process, the

sample was divided into 2 groups, namely 20 children in the intervention group of Bagea Cake sago dates and 20 children in the group without intervention (Bagea Sago cake). Before the intervention, a BB assessment was carried out on the child (Pre-test) and then given treatment. Each child is given a Bagea cake of Sago dates as much as 1-2 pieces/day for 30 days. The weight of a piece of date sago cake is 8.195 grams, by composition; Water content is 2.48%, carbohydrates are 50.06%, Fats are 14.31%, proteins are 1.31%, and Iron (Fe) is 37.70%. The instruments used during the study were in the form of questionnaires used to assess the body BB of children aged 6-12 months as well as observation sheets to control giving and ascertain whether respondents consumed the Bagea Sago date cake given. Analysis of the data was performed with an independent t-test and a paired t-test.

Research Results

Table 1
Distribution Of Respondent Characteristics In The Intervention Group And Control Control Group

Variable	Intervention(n=20)	Control (n = 20)
	n(%)/ Average ±SD	**n(%)/ Average ±SD**
Mother's Age (years)		
≤ 20	1 (100)	0
21-30	12 (44.4)	15 (55.6)
31-40	7 (58.3)	5 (41.7)
Mom's Job		
Housewife	14 (42. 4)	19 (57. 6)
Not housewife	6 (85. 7)	1 (14.3)
Education		
Primary	1 (50)	1 (50)
Junior High School	3 (75)	1 (25)
High School	13 (41. 9)	18 (58. 1)
College	3 (100)	0
Paritas		
Primiparous	6 (46. 2)	7 (53. 8)
Multiparous	14 (53,8)	12 (46. 2)
Grandemultipara	0	1 (100)
History of Abortus		
Ever	3 (100)	0
Never	17 (45. 9)	20 (54. 1)
Child's Age (months)		
6-9	13 (43.3)	17 (56.7)
10-12	7 (70)	3 (30)
Gender		
Man		
Woman	5 (38.5)	8 (61.5)
Brightly body	15 (55.5)	12 (44.5)
Pre-test		
Post-test		

Body length	8.19±0.87	7,82±1,13
Pretest	8.76±0.82	7.94±1.17
Postest		
Head circumference		
Pre-test	69,97±3,98	66.77±4.18
Post-test	70,58±4,22	67.06±4.30
Cirmunference of the upper arm		
Pretest	42,94±2,76	41.19±2.68
Post-test	41,55±7,06	41,70±2,30
	13,52±1,01	13.14±1.39
	15.34±7.31	13.14±1.40

Table 1 shows the characteristics of respondents, the average age of mothers in the intervention and control group was the most in the 21-30 years category, namely 12 (44.4) and 15 (55.6). The most maternal education in the high school category is 18 people (58.1). The most maternal occupations as IRT are 19 people (57.6%). The age of the baby is the most in the category of 6-9 months, which is 17 people (56.7%). The sex of children is the most in the Female category, namely 15 babies (55.5%). The average body weight of babies during post-test in the intervention group was 8.76±0.82 kg and the control group was 7.94±1.17, as well as another anthropometry such as body length, head circumference, and circumference of the upper arm the largest baby in the intervention group.

Table 2
Analysis of BB Differences in Each Group

Variable Bodu weight (Kg)	**Berarti±SD Pre-test**	**Berarti±SD Post-test**	***P***
Intervention(n= 20)	7.6±0.995	8.36±0. 811	0.000*
Control (n = 20)	7.36±1.140	7. 48±1. 141	0,225**

*p = Paired T-test, *Control, **intervention*

Table 2 shows changes in body weight in each group. In the mean ±SD intervention group, the body weight before treatment was 7.6±0.995 kg, while after the intervention there was an increase in mean ±SD of 8.36±0. 811 kg. for the control group, the mean ±SD body weight before treatment was 7.36±1,140 kg, while at the time of post-test there was an increase of mean ±SD 7. 48±1. 141 kg.
the results of the analysis were obtained in the control group p= 0.000<0.05. this shows a significant improvement. While in the control group, the value of p = 0.225>0.05 was obtained, this showed an insignificant change.

Table 3
Analysis of Body Weight Differences in Intervention Groups and Group Controls

Variable	Berarti ±SD	*P*
BB (Kg)		
Intervention (n= 20)	8.76±0.82	0,015*
Control (n = 20)	7.94±1.17	

p = Unpaired T test

Table 3 shows weight differences in the intervention and control groups. The body weight of the post-test in the Mean±SD intervention group was 8.76±0.82 kg, while in the Mean±SD control group it was 7.94±1.17 kg. The results of the bivariate analysis showed that there was a difference in weight in the group that received the intervention in giving date sago Bagea cake with a value of $p = 0.015 < 0.05$.

Discussion

Research on stunting focuses on food intake, but a growing body of evidence suggests an important role of the natural and physical environment in children's health. The interaction between the environment and nutrition presents an interesting dynamic, where the interaction between environmental factors and nutritional status can lead to changes in health status (Yahya et al., 2020). However, nutritional intervention factors play the most important role in efforts to deal with health problems, especially stunting.

The occurrence of weight gain and loss, one which can be influenced by factors such as food intake. Food intake is a nutrient that is consumed by the body for activities and to achieve optimal health (Khan, Zaheer, & Safdar, 2019). Food intake or energy intake is a risk factor for malnutrition. Low or less energy consumption will result in the body responding by increasing the use of energy reserves such as muscle and fat, thus causing existing energy reserves to be used to meet the needs of the time, this will result in a decrease in growth that leads to thinner individuals compared to adequate energy intake (Metty & Inayah, 2018).

In this study, significant results were obtained where the group that was given the intervention of Bagea Sago date cakes had an increase in body weight with a Mean±SD of 8.76±0.82 kg, while in the Mean±SD control group of 7.94±1.17 kg. The food ingredients used include sago flour and dates have ingredients that support the increase in children's weight. Sago flour has the potential to become an alternative food source because of its high carbohydrate and protein content and the ability to substitute flour in the food industry (Wahab & Baco, 2016).

Complementary feeding too early or too late is a common problem that often occurs in the community. Giving a variety of food to children is needed because children need different nutritional intake. In addition to improper practices in feeding, people's habits are also very influential such as children's food menus that only focus on the number of carbohydrates. Therefore, before performing supplementary feeding, it

is very important to pay attention; to the age of the child, the frequency of administration of food in a day number of feedings food or portions for one meal, food texture, food variety, giving food actively/ responsively to children and always maintaining cleanliness (Diona & Flora, 2020).

In addition to sago, previous studies have shown an increase in rat weight at date administration ($p = 0.000$ or $p < 0.01$). The increase in body weight in the group given dates was almost the same as the group given the standard treatment of FeSO4 supplements (Fadila, Wasita, & Dirgahayu, 2018). By adding dates to daily food intake, it is hoped that it can help improve malnutrition conditions in children. In addition to iron content, dates are rich in other nutrients, namely high in carbohydrates, and low in protein and fat, which are thought to play an active role in increasing the body weight of rats. Date palm fruits contain a high percentage of carbohydrates (total sugars, 44-88%), fats (0.2-0.5%), proteins (2.3-5.6%), and a high percentage of dietary fibre (6.4-11.5%) (Care et al., 2021). The study of 10 varieties of dates, it was obtained that the sugar content amounted to 71.2-81.4% dry weight, and a low concentration of protein (1.72-4.73%) and fat (0.12-0.72%). The main sugar content in dates is glucose and fructose. An experimental study by Mard et al. (2010), showed that oral administration of date palm extract and its fraction increased body weight through a decrease in water intake and caused hypoglycemia in alloxan-induced diabetic rats (20).

Previous research with recovery supplementary feeding (PMT-P) based on dates, black seed, and olives containing high fibre which can help to prevent constipation or obstipation, can facilitate digestion by absorbing water into the colon of faeces so that it is produced will be softer and bigger which makes bowel movements smoother and more regular (Care et al., 2021). Fibre also maximizes the absorption of nutrients from food, especially nutrients that are small in quantity, maintaining the body's resistance by choosing microbes in the intestines, these microbes will also break fibre into acids that can stimulate the activity of immune cells, that way immune cells will be stronger. In addition, fibre can also reduce ideal weight so that it can prevent obesity and diabetes (Ernawati, Lakare, & Diansari, 2018).

There is this condition fibre can develop and accumulate food in the stomach, so that it quickly feels full and the feeling of satiety will last longer than other foods. Apart from being high in fibre, the oil contained in olives in MPT-P based on dates, black seed and olives has better quality than vegetable oils and other animal oils because it has no side effects that can cause diseases in the blood circulation and arterial blood vessels (Georgiadis & Penny, 2017). Black seed contained in supplementary feeding-Primary makes toddlers' appetite increase, facilitates digestion, and adds to the immune system because it contains antioxidants that can protect the body from free radicals. In addition, the content of dates in PMT-P helps increase red blood cell levels and helps gain weight by decreasing water intake in the body (4).

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