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Research Article

TEMPE FORMULATION AS COMPLEMENTARY FOODS FOR BREAST MILK TO MEET THE NUTRITIONAL NEEDS OF BABIES?

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ABSTRACT

Background: Complementary food for breast milk is food or drink that contains nutrients, given to babies or children aged 6-24 months to meet nutritional needs other than breast milk. Complementary Foods which functions to introduce babies from breast milk to family food. The aim of this research is to determine the effectiveness of tempe formulations as Complementary Food for Breast Milk in meeting the nutritional needs of babies.
Methods: The research method used is quantitative using an experimental design namely one of the pre-experimental methods where there is no comparison group (control) but a first observation has been carried out (pretest which tests changes after treatment). The population in this study were babies 6-12 months who had a low BMI as many as 43 babies. The sampling technique uses saturated sampling, namely all the population is sampled.
Results: The results of the research show that respondents who consume tempeh as complementary breast milk can meet the nutritional needs of babies which can be seen from the changes in baby's weight which increase every month.
Conclusion: It was concluded that the tempeh formulation could increase the nutritional needs of babies.

Keywords : Tempeh Formulation, Complementary Food, Breast Milk, Nutrition, Baby

INTRODUCTION

Complementary food for breast milk is food or drink that contains nutrients, given to babies or children aged 6-24 months to meet nutritional needs other than breast milk. Complementary Food for Breast Milk which functions to introduce babies from breast milk to family food[1]. Complementary Food for Breast Milk is in the form of solid or liquid food which is given in stages according to the baby's age and digestive ability[2].

The global breastfeeding rate in 2015-202 was still very low and did not meet the target of 38.3%, causing an estimated 144 million children under five to experience stunting[3]. In Indonesia in 2021, the coverage of giving Complementary Food for Breast Milk to babies aged >6 months is 46.8% and will increase in 2022 to 51.1%[4]. The provision of Complementary Food for Breast Milk in Southeast Sulawesi has decreased, namely in 2021 there was 62.54% and in 2022 there was 61.68%. Complementary Food for Breast Milk is not a substitute for breast milk, so Complementary Food for Breast Milk given to babies should be regular and nutritious because it can meet nutritional needs in addition to breast milk[5].

Complementary Food for Breast Milk must pay attention to the composition of the ingredients of Complementary Food for Breast Milk which are adapted to the baby's digestive system which is still in the process of development [6]. One of the nutritious food ingredients that can be used as Complementary Food for Breast Milk is local food which is part of everyday food, namely tempeh. Tempe contains the amino acids lysine and trypothopan, respectively 404 mg/g N and 84 mg/g N[7]. Research conducted by Rachmawati, Septiar and Mulyasari in 2020 showed that the nutritional content of instant soybean tempeh porridge was found to contain energy, fat and carbohydrates according to SNI Complementary Food for Breast Milk[8].

The short-term negative impacts if a baby is given complementary foods before the age of 6 months, 3 of which are the baby losing nutrients from breast milk, reducing the baby's sucking ability, triggering diarrhea, and triggering anemia. Meanwhile, long-term negative impacts if babies are given complementary foods before 6 months include obesity, hypertension, atherosclerosis and allergies. The inappropriate timing of Complementary Food for Breast Milk is caused by several reasons, one of which is because the mother is working[9].

One of the nutritious food ingredients that can be used as Complementary Food for Breast Milk is local food which is part of everyday food, namely tempeh. Tempe contains the amino acids lysine and trypothopan, respectively 404 mg/g N and 84 mg/g N. Research conducted by Rachmawati, Septiar and Mulyasari in 2020 showed that the nutritional content of instant soybean tempeh porridge contained energy, fat and carbohydrates according to SNI Complementary Food for Breast Milk.

Complementary Food for Breast Milk is given to meet the nutritional needs of babies aged 6-12 months. Babies who are malnourished or malnourished are at risk of stunting. Therefore, as early as possible, prevent malnutrition by providing complementary foods that are rich in nutrients, especially the ingredients found in

tempeh.

METHODS

Methods include the design, population, sample, data sources, techniques/instruments of data collection and data analysis procedures. Methods should make readers be able to reproduce the experiment. Provide sufficient detail to allow the work to be reproduced. Methods already published should be indicated by a reference: only relevant modifications should be described. Do not repeat the details of established methods. Authors have to put the number of ethical approval from the Ethical Research Committee provided for all type of study both using primary and secondary data.

The type of research carried out was quantitative using an experimental design pseudo (pre-experiment) with a one group pre-post design approach, which is one of pre-experimental method where there is no comparison group (control) but there is. The first observation was carried out (pretest which tests changes after treatment). The population in this study were babies 6-12 months who had a low BMI as many as 43 babies. The sampling technique uses saturated sampling, namely all the population is sampled.

The location of this research is Sidodadi Village, April-October 2023. The data analysis used is the Mc Nemar test because data uses data categorical. This test uses paired but identical data samples comparing data before and after being given Complementary Food for Breast Milk. Before and after giving Complementary Food for Breast Milk, researchers measure weight and height.

The data used in this research are primary data and secondary data. The stages of this research are as follows Measure weight and height before consuming Complementary Food for Breast Milk formulated with tempeh biscuits; Record the results of the first stage measurements ;The process of making tempeh biscuits to be consumed by babies at mealtime 3 times a day for 3 weeks ;Documentation of ongoing results through a daily notebook; Final measurement or post test and then record the results.

RESULTS

Based on the results of research that had been carried out for about 2 months, researchers intervened directly on babies in the Batalaiwaru Community Health Center working area by providing Complementary Food for Breast Milk from a breast milk tempeh formulation mixed with chicken broth so that it could meet the nutritional needs of babies. Before the intervention was carried out, the researcher filled out an observation cupboard regarding the baby's weight before being given the Complementary Food for Breast Milk formulation from tempeh. In the research results, it was found that the baby's weight increased after consuming Complementary Food for Breast Milk and the baby's appetite increased because tempeh had been mixed with chicken broth.

The characteristics of the respondents in this study consisted of the baby's age, mother's age, baby's gender, mother's occupation and mother's highest level of education.

Table 1. Frequency Distribution of Respondents based on Baby's Age

Age	Frequency (f)	Presentation (%)
6-7 months	10	23,24
8-9 months	13	30,25
10-12 months	20	46,51
Total	**43**	**100**

Data source: primary data, 2023

Table 1 shows that the frequency

distribution of respondents based on the age of the baby is that the most were babies aged 10-12 months as many as 20 people (46.51%) and the least were babies aged 6-7 months as many as 10 people (23.24%).

Table 2. Frequency Distribution of Respondents Based on Mother's Age

Age	Frequency (f)	Presentation (%)
20-25 months	16	37,21
26-30 months	17	39,54
31-35 months	10	23,25
Total	**43**	**100**

Data source: primary data, 2023

Table 2 shows that the most mothers in this study were 17 years old (39.54%) and the least were 10 mothers aged 31-35 years (23.25%).

Table 3. Frequency Distribution of Respondents based on Baby Gender

Gender	Frequency (f)	Presentation (%)
Man	23	53,48
Woman	20	46,52
Total	**43**	**100**

Data source: primary data, 2023

Table 3 shows that the frequency distribution of respondents was 23 men (53.48%) and 20 women (46.52%).

Table 4. Frequency Distribution of Respondents by Occupation

Work	Frequency (f)	Presentation (%)
PNS	8	18,61
IRT	35	81,39
Total	**43**	**100**

Data source: primary data, 2023

Table 4 shows that the frequency distribution of respondents based on work is that 8 respondents worked as civil servants (18.61%) and 35 people as domestic workers (81.39%).

Table 5. Frequency Distribution of Respondents Based on Last Education

Last education	Frequency (f)	Presentation (%)
Senior High School	31	72,09
College Amount	12	27,91
Total	**43**	**100**

Data source: primary data, 2023

Table 6 shows that the frequency distribution of respondents based on high school education was 31 people (72.09%) and tertiary education was 12 people (27.91).

DISCUSSION

Tempe Formulation as Complementary Food for Breast Milk to Meet the Nutritional Needs of Babies

Before giving Complementary Food for Breast Milk, researchers measured the weight of each baby or respondent and then recorded the results of the first stage of measurements. The process of making tempeh biscuits is done by boiling the tempeh until cooked, then mashing it and then consuming it using chicken stock. In this study, tempeh was served to babies in the form of porridge mixed with chicken stock to form a thick texture. After being given the tempeh formulation 3x a week and carried out over a period of 2 months. The last weight measurement is carried out 2 months later and the results are recorded

The results of other research show that

giving Complementary Food for Breast Milk is useful for achieving optimal growth and development, avoiding deficiencies in both macro and micro nutrients, maintaining health, preventing disease and speeding up recovery if sick, helping physical, spiritual and psychomotor development, educating healthy habits. good about food and introducing a variety of food ingredients that suit the baby's physiological condition[10].

The theory states that in the tempeh formula, because it contains prebiotics which are nutrients for the growth and activity of beneficial bacteria or microorganisms (probiotics), the absorption of food from the small intestine to the large intestine can be protected. In this way, the nutrients from the formula presented can be digested properly so that the body's immune system becomes better and results in shorter recovery days. Good Complementary Food for Breast Milk is food that contains a number of calories or energy (carbohydrates, protein and fat), vitamins, minerals and fiber for growth. Food consumption for babies and toddlers must be sufficient and balanced because children under five are experiencing a process of rapid growth and development. Good Complementary Food for Breast Milk must provide high enough energy and contain sufficient amounts of high quality protein[11].

The results obtained showed that respondents who consumed tempeh as complementary breast milk were able to meet the nutritional needs of babies, which can be seen from the change in baby's weight which increases every month.

CONCLUSIONS

Conclusion are showed that respondents who consumed tempeh as complementary breast milk were able to meet the nutritional needs of babies, which can be seen from the change in baby's weight which increases every month.

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