

Education and Fondness Study: Supplementary Food Provision of Depik (*Rasbora tawarensis*) and Tempe-Based Nugget Formulas to Toddler Mothers in Bener Mulie Village, Wih Pesam District, Bener Meriah Regency

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Abstract

Efforts that support optimal growth and development for children will continue to be carried out. One way to overcome this is through the provision of supplementary feeding for toddlers at the Posyandu. This research aims to educate and test the preference for supplementary feeding nugget formula based on local food, depik fish (*Rasbora tawarensis*), and tempeh on mothers of stunting toddlers. This study used the quasi-experimental design research with dependent t-test and ANOVA test. The result showed that the average value of a mother's knowledge before being educated was 42.50. Meanwhile, the average value after being educated is 52.00, meaning that there is an increase in knowledge after being educated. The results of the liking test showed that there were 2.5% of respondents who said they did not like it, 7.5% of respondents said they liked it somewhat, 57.5% of respondents said they liked it, and 32.5% of respondents said they really liked it. This shows that the supplementary feeding products of depik fish nuggets (*Rasbora tawarensis*) and tempeh are favored by mothers of toddlers. The results of the dependent t-test showed that the p-value was < 0.05 (0.006). Therefore, it can be concluded that education has a significant effect. Based on the results of the ANOVA test, which resulted in a p-value of < 0.05 (0.001), it was concluded that supplementary feeding nuggets based on local food, depik fish nuggets (*Rasbora tawarensis*), and tempeh are favored by mothers of toddlers. It is hoped that the relevant agencies can inform the public about supplementary feeding products and the manufacturing process that utilizes local food.

Keywords: education, hedonic test, supplementary feeding

Introduction

According to the Basic Health Research (2018) results, Indonesia showed a decrease in the prevalence of stunting (30.8%), while the prevalence of stunting in Aceh decreased from 2007 to 2018 which was 7.3% and stunting in toddlers in Aceh was ranked third out of 34 provinces in Indonesia with a prevalence of 37.3%. Meanwhile, the stunting rate in children under 2 years old (baduta) was ranked 1st out of 34 provinces with a prevalence of 37.9%. Rikesdas' 2013 data showed that the proportion of the national average consumption behavior of eating fewer vegetables and fruits in the 10–14-year age group is 93.6%. Certain food behavior in the population of the 10-14-year age group, the proportion of consumption per day for risky foods is 75.7%, sweet food 63.1%, caffeinated 16.3%, salty 24.4%, fatty 13.5%, preserved 8.6%, baked 5.65%, and noodle products 15.4%.

Stunting prevalence data based on the results of the Indonesian Nutritional Status Study (SSGI), the prevalence of stunting in Aceh Province is 33.2%. Meanwhile, the Subulussalam district level is in the first position. Then, in the second position, there is the Simeulue District, and the Bener Meriah is in the third highest position among all districts of the Aceh Province, with a stunting prevalence of 40.0% (SSGI 2021).

Nutritional problems in under-fives that are addressed by the Indonesian government have not been realized optimally or eliminated malnutrition rates in children under-fives. Efforts that support optimal growth and development for children have been and will continue to be carried out and even developed in a better direction, one of which is through growth and development monitoring activities carried out at the Posyandu as an implementation of the Presidential Regulation of the Republic of Indonesia number 42 of 2013 concerning Movement National acceleration of nutrition improvement. One way to overcome this is through the provision of Supplementary Food (PMT) for toddlers at the Posyandu. However, the lack of variety in the supplementary feeding menu provided can make toddlers feel bored. Especially, if supplementary feeding is given mung bean porridge and boiled eggs every month, it can cause new problems, namely the consumption of supplementary feeding in toddlers is not optimal.

Supplementary Feeding Toddler is nutritional supplementation in the form of supplementary food in the form of biscuits using a special formulation and fortified using vitamins and minerals given to infants and toddlers aged 6-59 months who are categorized as underweight. For infants and children aged 6-24 months, this supplementary food is used with Complementary Foods for Breast Milk (MP-ASI). Every 100 grams of supplementary feeding contains 45 calories, 14 grams of fat, 9 grams of protein, and 71 grams of carbohydrates (Si & An, 2018).

One of the wealth of fish in Indonesia in Central Aceh is depik. Depik is an endemic fish in Laut Tawar Lake, Central Aceh Regency. It is approximately 8 cm long and 2 cm wide and can be caught all year round, especially in the rainy season. In the dry season, depik can only be caught when the cold wind blows (Munthe, 2016). Fish is a source of high-quality protein. Protein in fish has a complete composition and amount of essential amino acids. Fish also contains omega-3 fatty acids which have specific advantages over other animal foods because of their polyunsaturated essential fatty acid composition. Depik contains 25.04% protein, 39.22% water, 6.73% ash, 2.63% fat, and 25.04% fiber. Meanwhile, tempeh is a food source of protein, dietary fiber, calcium, vitamin B, and iron. Tempeh is made by fermentation using *Rhizopus sp.* mold on a soybean substrate so as to produce a dense and compact mass. The nutritional content of 100g of tempeh is 55.3g water; energy 201 kcal; 20.8g protein; 8.8g fat; 13.5g carbohydrates; and 1,4g fiber (D. Nita, 2021).

Methods

This research employs the quasi-experiment using one group pre-test and post-test design. Using this method, the results of the treatment can be obtained more accurately since it compares with the situation before being given treatment. In this research design, samples will be given a pre-test first, then given treatment in the form of education on the formula for making supplementary feeding nuggets based on local food: depik (*Rasbora tawarensis*) and tempeh. After being educated, respondents will be given supplementary feeding nuggets to be tasted along with the favorite test checklist form, and after being given the treatment, samples will be given a post-test. The population in this study were all mothers of children under five in the Rumoh Gizi Gampong empowerment area, which indicated that their children had nutritional problems. The total population is 40 people. The sampling technique used in this study is total sampling.

Results

Respondent Characteristics

Table 1 shows that most of the respondents' ages are in the category 26-35 years, with as many as 18 respondents (45%). Meanwhile, the education of the majority of respondents is in high school education, with as many as 24 respondents (60%). The job characteristics of most respondents are housewives, with as many as 30 respondents (75%).

Table 1. Respondent Characteristics

| Characteristics | F | Percentage |
|--------------------|----|------------|
| Ages | | |
| 17 – 25 years old | 8 | 20% |
| 26 – 35 years old | 18 | 45% |
| 36 – 45 years old | 14 | 35% |
| Total | 40 | 100% |
| Educations | | |
| Bachelor | 7 | 17.5% |
| Senior High School | 24 | 60% |
| Junior High School | 9 | 22% |
| Total | 40 | 100% |
| Occupation | | |
| Housewife | 30 | 75% |
| Entrepreneur | 7 | 17.5% |
| Farmer | 1 | 2.5% |
| Teacher | 2 | 5% |
| Total | 40 | 100% |

Knowledge

Based on Table 2, it can be seen that the good category has as many as 36 respondents (90%), while only 4 respondents (10%) were in the less category. Meanwhile, the knowledge level of respondents at the time of the post-test was in the good category, with as many as 40 respondents (100%).

Table 2. Knowledge Level of Respondents, After and Before Education

| Knowledge | Average | F | P-Value |
|-----------|---------|----|---------|
| Pre-Test | 42.50 | 40 | 0.006 |
| Post-test | 51.85 | 40 | |

Table 3 shows that the mean values of mother's knowledge before and after being educated on making supplementary feeding nuggets based on local food, depik (*Rasbora tawarensis*), and tempeh were 42.50 and 52.00, respectively. Therefore, it can be concluded that there is an increase in knowledge among mothers of stunting toddlers after being educated. The results of the dependent t-test show that the p-value is < 0.05 (0.006). Therefore, it can be concluded that the education on making supplementary feeding nuggets based on local food, depik (*Rasbora tawarensis*), and tempeh has an effect on the knowledge of toddler mothers in the Bener Mulie Village, Wih Pesam District, Bener Meriah Regency.

Table 3. The Effect of Education on Making Supplementary Feeding (PMT), Pre- and Post-Intervention

| Knowledge | F | P-value* |
|--------------------|----------|-----------------|
| Pre test | | |
| Mean | 42.50 | |
| The Highest Score | 52 | |
| The lowest Score | 34 | |
| Deviation standard | 4.925 | |
| Post-test | | 0.006 |
| Mean | 51,85 | |
| The highest score | 59 | |
| The lowest score | 44 | |
| Deviation standard | 4.324 | |

Hedonic Values

Based on Table 4, it can be seen that color, flavor, and texture are in the same column. It is shown that there is an effect of color and flavor on the taste of supplementary food, the depik and tempeh nuggets. Meanwhile, the texture is in the same column as the taste. It is shown that texture does not affect the supplementary food's taste. Meanwhile, the favorite is in a different column. This indicates that there is an effect of color, flavor, texture, and taste on the preferences of supplementary feeding nuggets of depik fish (*Rasbora tawarensis*) and tempeh.

Table 4. Respondents' Preference Values

| Hedonic Test for Depik- (<i>Rasbora tawarensis</i>) and Tempeh-Based Nuggets | | | | |
|--|----------|----------|----------|----------|
| Hedonic Variable | N | 1 | 2 | 3 |
| Color | 40 | 2.33 | | |
| Flavor | 40 | 2.28 | | |
| Texture | 40 | 2.53 | 2.53 | |
| Taste | 40 | | 2.75 | |
| Favorite/like | 40 | | | 3.20 |

Table 5. Percentage of Respondents for Depik- (*Rasbora tawarensis*) and Tempeh-Based Nuggets

| Preference Categories | N | % |
|------------------------------|----------|----------|
| Does not like it | 1 | 2.5 |
| Nearly likes it | 3 | 7.5 |
| Likes it | 23 | 57.5 |
| Really likes it | 13 | 32.5 |

Based on the table above, it is shown that there is 1 respondent (2.5%) who does not like the depik (*Rasbora tawarensis*) and tempeh-based nuggets. Then, as much as 3 (7.5%) respondents stated that they like the nuggets quite a bit. Meanwhile, as many as 23 respondents (57.5%) said that they liked the nuggets. Lastly, as many as 13 respondents (32.5%) said that they really liked the nuggets. Therefore, it can be concluded that the supplementary food, the depik- (*Rasbora tawarensis*) and tempeh-based nuggets, are liked

and well-received by mothers of stunting toddlers in the Bener Mulie Village, Wih Pesam District, Bener Meriah Regency.

Hedonic Characteristic Values

Based on Table 6, it can be seen that panelists assessed the organoleptic test in terms of color, resulting in a value of 2.33. It means that the nuggets of depik (*Rasbora tawarensis*) and tempeh, for the panelists, have an appetizing color. In terms of flavor, it obtained a value of 2.28. It means that the flavor of the nuggets, for the panelists, is delicious. The rating for the product texture is 2.53. According to the panelists, the texture of the nuggets is soft, crispy, and brittle. The taste rating of the product resulted in a value of 2.75. According to the panelists, the nuggets have a savory taste. Meanwhile, the value obtained from the preference test results is 3.20, indicating that the nuggets are highly favored by the panelists.

Table 6. Hedonic Characteristic Values for Depik (*Rasbora tawarensis*) and Tempeh Nuggets

| Hedonic Characteristic Values for Nuggets of Depik (<i>rasbora tawarensis</i>) and Tempe | | | |
|--|----|------|---------|
| Variable | N | Mean | P-value |
| Color | 40 | 2.33 | 0.001 |
| Flavor | 40 | 2.28 | |
| Texture | 40 | 2.53 | |
| Taste | 40 | 2.75 | |
| Favorite/like | 40 | 3.2 | |

Based on the ANOVA test, a p-value of < 0.05 (0.001) was obtained; thus, H_a is accepted. Therefore, it can be concluded that the supplementary food, nuggets based on depik (*Rasbora tawarensis*) and tempeh, has an effect on the level of preference of toddler mothers in the Bener Mulie Village, Wih Pesam District, Bener Meriah Regency.

Discussion

Respondents' Characteristics

Researchers conducted education and preference tests on the local-food-based supplementary feeding nuggets formula of depik (*Rasbora tawarensis*) and tempeh on toddler mothers in the Bener Mulie Village, Wih Pesam District, Bener Meriah Regency. The tests were done to determine the increase in knowledge and to find out whether the developed nugget formula can be accepted. Based on this research, it was found that the majority of respondents were in the category of 26-35 years old, with as many as 18 respondents (45%). Meanwhile, the majority of respondents' education was in senior high school, with as many as 24 respondents (60%). The job characteristics of most respondents are housewives, with as many as 30 respondents (75%).

A theory states that education is a process related to the learning process so as to gain knowledge through school. The source of information is a place to receive information. Information is generated through mass media, such as radio, television, magazines, newspapers, and social media. The knowledge that exists in humans depends on the level of education obtained, both formally and informally. This level of knowledge will influence how a person understands knowledge about nutrition and health. The level of one's nutritional knowledge affects the behaviors and attitudes in choosing food, which in turn, ultimately affects a person's nutritional state. The higher a person's level of knowledge, it is hoped that the nutritional state will also be better (Rahmayanti et al., 2020).

Work determines the economic situation of a person and family. Toddlers from families with a low economic status are more likely to experience stunting than toddlers from families with a high economic status. Statistically, the results of this study indicate that there

is a correlation between family economic status and the occurrence of stunting in under-five children. Toddlers from families with a low economic status are 1.29 more likely to experience stunting compared to toddlers from families with a high economic status (Oktarina & Sudiarti, 2014).

Based on the assumptions of the researcher at the time of the training, many mothers were enthusiastic about how to make supplementary food based on local food, depik (*Rasbora tawarensis*) and tempeh. This was seen from how the mothers paid great attention to the researchers when explaining and the number of questions asked. The knowledge test that resulted in the good category could be because there is the Gampong Gizi Rumoh in the Bener Mulie Village, so mothers are often exposed to information about stunting and supplementary food. Nevertheless, the stunting problem still persists in the Bener Mulie Village.

Knowledge Level of Mothers of Stunting Toddlers

Based on a theory, it is stated that the knowledge produced is divided into six categories of knowledge strata, that is *know* (tahu), *comprehension* (memahami), *application* (aplikasi), *analytic* (analisis), *synthesis* (sintesis), dan *evaluation* (penilaian). Tahu (*know*) is information about previously memorized material (Ayu Namirah, 2019). The results showed that the mean value of mother's knowledge before being educated on making supplementary feeding nuggets based on local food, depik (*Rasbora tawarensis*) and tempeh, was 42.50. Meanwhile, the mean value after being educated was 52.00. Therefore, it can be concluded that there is an increase of knowledge in mothers of stunting toddlers after being educated.

Based on the results of the dependent t-test, it shows that the p-value is < 0.05 (0.006), so H_a is accepted. Thus, it can be concluded that there is an effect of education on making PMT nuggets based on local food, depik fish (*Rasbora tawarensis*) and tempeh with the knowledge of mothers of toddlers in Bener Mulie Village, Wih Pesam District, Bener Meriah Regency. The results of this study are in line with the results of research conducted by Yessie (2020) that the knowledge of mothers who have toddlers before training is 33.3%, increasing after training to 50%. The results of the t-test of the knowledge of mothers before and after the training showed that there was a significant difference in the knowledge of the mothers before and after being given the training.

Based on the results, the mean value of mothers' knowledge before being educated on making supplementary feeding nuggets based on local food, depik (*Rasbora tawarensis*) and tempeh was 42.50. Meanwhile, the mean value after being educated on making supplementary feeding nuggets based on local food, depik fish (*Rasbora tawarensis*) and tempeh is 52.00. Therefore, there is an increase of knowledge in mothers of stunting toddlers after being educated.

Hedonic Values

The hedonic test is the most widely used test to measure the level of preference for production. This level of preference is called a hedonic scale, for example, like very much, like, somewhat like, somewhat dislike, dislike, and very dissatisfied. (Suryono et al, 2018). Based on the results of the ANOVA test, it shows that the p-value is < 0.05 (0.001), so H_a is accepted. Thus, it can be concluded that there is an influence on the development of the supplementary feeding nuggets formula based on local food, depik (*Rasbora tawarensis*) and tempeh with the level of preference of mothers under five in Bener Mulie Village, Wih Pesam District, Bener Meriah Regency.

Hedonic Characteristic Values

The results obtained from the researcher showed that the average value of the panelists assessed the organoleptic test in terms of color with a value of 2.33. It means the color of the product from depik fish nuggets (*Rasbora tawarensis*) and tempeh for panelists has an appetizing color. In terms of aroma obtained a value of 2.28. It means that the aroma of depik fish nuggets (*Rasbora tawarensis*) and tempeh for the panelists smells delicious. The rating for the product texture is 2.53. It means the texture of depik fish nuggets (*Rasbora tawarensis*) and tempeh for panelists has a soft/crispy/brittle texture. The taste rating of the product has a result of 2.75. It means the taste of depik fish nuggets (*Rasbora tawarensis*) and tempeh for panelists has a savory taste. Meanwhile, the results obtained from the preference test are 3.20. It means the depik fish nuggets (*Rasbora tawarensis*) and tempeh products are highly favored by the panelists.

Conclusion

This research shows that education on making supplementary feeding nuggets based on depik fish (*Rasbora tawarensis*) and tempeh affects the knowledge of toddler mothers. It can also be seen that the development of supplementary feeding nuggets was highly favored by toddler mothers in Bener Mulie Village, Wih Pesam District, Bener Meriah Regency. It is hoped that the relevant agencies can provide information and knowledge to the public regarding the product and the process of making supplementary foods that utilize local foods, such as depik fish (*Rasbora tawarensis*) and tempeh.

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