

Conference Paper

Efficacy of Micronutrient Supplementation from Local Food of Bada Fish (*Stolephorus Insularis*) on the Status of Anemia Among Adolescents in Padang City

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Abstract

The objective of this study was to determine the effectiveness of functional supplementary food formulas of the bada fish flour against the levels of adolescent Hb in the city of Padang, West Sumatra Province. This research is a continuation of the previous research – preparing additional food products for anemia (FUMIA) based on local food ingredients of bada fish in the form of cookies. The research design used was the One Group Free Post T by conducting an efficacy test on the FUMIA formula intervention with a duration of intervention of 21 days. The results showed an increase in the average Hb level of the subjects before being given an intervention of 0.35 mg%, but not significantly different. For further research, it is necessary to increase the number of subjects/research samples and the implementation of longer interventions and the provision of interventions accompanied by the provision of foods containing high vitamin C so that iron absorption is better.

Keywords: bada fish, food supplement, micronutrieny, anemia, adolescent

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1. Introduction

In Indonesia according to the Ministry of Health of Indonesia data in 2009, it was found that anemia patients in adolescent girls were 33.7% (Hayati R, M. 2010). Whereas in 2010, the government has set a target of reducing the prevalence of anemia in adolescents by up to 20%. However, from the 2013 Riskesdas data, the prevalence of anemia in Indonesia is still high at 21.7%, with a proportion of 20.6% in urban areas and 22.8% in rural areas and 18.4% in males and 23.9% in females. Based on age group, anemia sufferers aged 5-14 years were 26.4% and 18.4% in the 15-24 year age group (Ministry of Health, 2013). As for the prevalence of anemia in adolescents in West Sumatra Province in 2009 amounted to 18.64% and in 2010 there was an increase to 24.63% (Balitbangkes, 2010; Balitbangkes, 2013). The city of Padang as a provincial capital city has a higher

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incidence of adolescent anemia than the provincial figure, which is 26.01% (Ministry of Health, 2013).

Recognizing the complexity of the causes of anemia, effective strategies are needed with integrated multi-sectoral and multifactorial approaches to achieve this global target (Stevens et al., 2013; WHO, 2012; Wrottesley, Lamper, & Pisa, 2015). The strategy of health efforts carried out by the community to prevent and control anemia must innovate in improvements in the diversity of food ingredients; fortification of foods with iron, zinc, folic acid and other micronutrients (WHO, 2012).

One way that is done in an effort to accelerate the prevention of the problem of adolescent anemia is in the form of supplementary food with the use of various local foods (Alia Lathifah Hanum, 2009).

This research is a continuation of research carried out in 2016, in which the study was only made to make PMT models for teens with products in the form of cookies from bada fish flour. This study aims to determine the effectiveness of functional supplementary food formulas of bada fish flour against levels of adolescent Hb in the city of Padang, West Sumatra Province. Output of this study will provide benefits as a scientific basis that can support government programs in an effort to improve the quality (quantity and quality) of consumption of nutrient-prone people, especially adolescent anemia, so that the target of overcoming nutritional problems accelerates in the first 1000 days of life.

2. Methods

This study is an efficacy study with 2 stages of research, namely: Stage 1: Research laboratory experiments to prepare food formula products in addition to adolescent anemia based on local food ingredients of bada fish in the form of cookies. Stage 2: Pre-experimental research to test the efficacy of the intervention of giving adolescent supplementary food formula (FUMIA) which was obtained in the first phase of the study. The research design used was the One Group Free Post Test.

Phase 1 research was carried out in 2016. Phase 2 research was carried out in 2017 by conducting an efficacy test of FUMIA formula intervention on Hb levels with a duration of intervention of 21 days. Phase 2 research took place in the work area of Nanggalo Public Health Center, Padang City. The material used is the Adolescent Supplementary formula product (FUMIA formula) that has been produced in the first phase of research, which is cookies. The population is a Level I Student majoring in Nutrition Polytechnic of the Ministry of Health of Padang who is anemic with the assumption that if there is a change in Hb levels in students it will also occur in adolescents. Based on the results

of screening, there were 20 female students suffering from anemia and all of them were used as research subjects. Hb level data is carried out by 1 person laboratory assistant (health analyst) using easy tauch. Data on nutrient intake was collected by means of 1 x 24 hour recall using a questionnaire conducted by a Nutritionist. Data that has been collected from questionnaires, checks and direct measurements and laboratory analysis results are processed and analyzed manually to determine the status of anemia or not. Data on nutrient intake was processed using the nutrient survey program. Final observations were made on Hb level data and nutrient intake. then analyzed descriptively to find the average value of each variable. To see the difference in Hb levels before and after the intervention used the dependent t-test with a confidence level of 95%. Ethical clearance was obtained from the ethical commission of the Ministry of Health's Research and Development Agency and informed consent from selected research subjects.

3. Results and Discussion

The results of the screening showed 20 people suffering from anemia and all of them were used as research subjects. During the intervention there were 2 subjects who had to be excluded from the observation because 1 person always took medicine to increase Hb (Sangobion) levels and one more person experienced a history of tonsils so that consuming intervention materials caused itching, so the number of research subjects was 18 people. Based on the observation that all research subjects can spend all PMT (Formula) given.

The average Hb level of the subject before the intervention was $10.79 \text{ mg / dl} \pm 0.67$ and Hb levels after intervention 11.14 ± 1.56 . Viewed from the average Hb level, the anemia status in the subject was classified as mild. The difference in Hb levels between subjects before being given an intervention with after intervention was 0.35 mg%. The statistical test results obtained p value = 0.388, it can be concluded that there was no significant difference between Hb levels before and after intervention. The absence of a significant increase may be due to the duration of the intervention that is too short, which is only 21 days, but it may also be because the sample is too small and absorption of iron is not maximal because iron absorption will be better if accompanied by vitamin C.

TABLE 1: Average Hb Level Differences Before and After Intervention.

Hb Level	Mean \pm SD	Difference	P Value
Before	10,79 \pm 0,67	0,35	0,388
After	11,14 \pm 1,56		

4. Conclusion

There was no significant difference between the Hb level of the subject before and after the intervention, but there was an increase in the average Hb level after the intervention was given. For further research it is necessary to increase the number of subjects / research samples and the implementation of longer interventions and the provision of interventions accompanied by the provision of foods containing high vitamin C.

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