Tambahan PAGE RESEARCH REPORTS

2013

1. Winarsi, H; Purwanto, A; Sasongko, ND. 2013. Effect of Germinated-soy Milk on Antioxidant and Immune Status of Lactating Mothers. Research Report. Medical and Science Health Faculty, Jendral Soedirman University, Purwokerto.

**FULL ABSTRACT**

Effect of Germinated-soy Milk on Antioxidant and Immune Status of Lactating Mothers

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The current study the germinated-soy enriched milk was expected to improve health status of lactating mothers that were shown by their high level of antioxidant and immune status in their bloods’ plasma and breast milk. This experimental research used a design of Randomized Controlled Trial, double blind that was rolled by 52 lactating mothers. The criteria for respondent were 20-35 years age, having a newborn up to 6 months old baby, healthy, living in Purwokerto area, and agreed to sign informed consent. Subjects were divided randomly into two groups: group I was given germinated-soy enriched milk, while II was given a placebo for 2 consecutive months in their daily diet. Blood and breast milk samples were taken three times, namely at baseline, followed by 1 and 2 months after intervention. Plasma and skim milk fraction samples obtained was used as a sample test. Sample tested including the activity of SOD, Catalase, and GSH-PX enzymes, and MDA, IL-6, and C-RP levels. Data were analyzed by one way analysis of variance with repeated measures and by paired samples of t-test. Differences between means were considered significant at p<0.05. The result showed that there was an increase in SOD plasma activity of 202.17 to 336.42 % (P = 0.043), catalase from 82.07 to 106.54 mU/ml(P=0.005), and GSH - PX of 137.43 to 143.06 ng/mL (P = 0.038). Instead, there was a decrease in the levels of MDA 27.56 to 12.66 µM(P=9.65E-06), IL-6 of 10.2 to 1.78 pg/mL (P = 0.02), and CRP from 9.35 to 2.38 mg/mL (P = 0.0015). In breast milk, there were also an increase in the activity of SOD from 360.42 to 699.31% (P = 0.56), catalase from 34.58 to 56.26 mU/ml (P=0.019), GSH - PX from 43.40 to 60.99 ng/ml (P = 0.049). The decline also occurred in MDA levels of 62.01 to 48.85 µM(P = 0.048), IL-6 from 4.89 to 1.56 pg/mL (P=0.44),and CRP from 0.099 into 0.046 mg/L (P = 0.77). There were unexpected findings, BMI decreased from 22.77+0.56 to 20.64+0.49 kg/m2 (P = 0.006) in the intervention group germinated-soy milk. In conclusion, germinated-soy milk could improve antioxidant status and the immune status of lactating mothers. Germinated-soy based product allows to develop as a healthy-diet products, considering its potential to losing weight in a short time.

Keywords: germinated-soy-enriched-milk, antioxidant and immune status, lactating-mothers

2016

1. Mulyani, E Y; Sudikno; Kuswary, M. 2016. Vitamin A Content of Fortified Unbranded Cooking Oil in the End of Distribution Point up to Households and its Impact on Vitamin A Status among Preschool Children. Research Report. School of Health Sciences, Esa Unggul University, Jakarta.

**FULL ABSTRACT**

Vitamin A Content of Fortified Unbranded Cooking Oil in the End of Distribution Point up to Households and its Impact on Vitamin A Status among Preschool Children.

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According to the World Health Organization (WHO), 45 countries have vitamin A deficiency of public health significance, which includes overt signs of deficiency, and 122 countries have subclinical levels of vitamin A depletion with marginal liver reserves. Many women and children have vitamin A deficiency that leads to vision loss and increased morbidity and mortality.The initiative of vitamin A fortification is based on years of indepth pilot studies that have been conducted since 2005 by Ministry of Health, Ministry of Trade and Industry, Board of Food and Drug, Universities, and Koalisi Fortifikasi Indonesia, a non-government organization actively supporting food fortification. It is also based on the low coverage of current program of high dose vitamin A capsul distribution for children underfive and mother after giving birth. The pilot studies of oil fortification that have been conducted include food vehicles suitable for fortification, fortification technologies in small and large scale cooking oil producers, fortification at distribution storage site and not in plant site, cooking oil consumption, deficit of daily vitamin A intakes compared to RDA, acceptable level of fortification, stability of vitamin A (retinyl palmytate), impact studies among high risk groups of vitamin A deficiency that showed an improvement of vitamin A status in all age groups at risk of vitamin A deficiency (VAD). The Government of Indonesia will launch mandatory fortification in March 2015. By improving vitamin A status, it is expected to improving health and nutritional status of the community. The objective of the study is to measure the impact of vitamin A fortification of cooking oil among children 12-35 month old.

2017

1. Herman, H; Nugraha, G I. 2017. Intergenerational Cycle of Low Birth Weight. Faculty of Medicine, Padjajaran University, Bandung.

**FULL ABSTRACT**

Intergenerational Cycle of Low Birth Weight.

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Low birth weight (LBW) is one of the health problems in developing country. The prevalence of LBW in Indonesia ranges between 11.1%-11.5%. Various factors affecting LBW need to be explored further to enable prevention efforts.

Tanjungsari Cohort Study (TCS) is a cohort study that has been running since 1988 with the second generation (F2), who was born within the cohort, has currently reached adulthood. This cohort gives opportunities to understand the impact of maternal birth weight and its influence on F2 pregnancy in terms of offspring birth weight (IBW of the third generation (F3).

This study is a longitudinal study designed as a part of the TCS in Sumedang District, West Java. One thousand five hundred forty one women were born during the period of 1988–1989. Of those, women who were pregnant during the period of January 2014 to 2015 participated in this study. To those subjects, some measurements were performed including body weight, which was measured using TANITA 240 MA (Tokyo, Japan); body height using Stadiometer SECA 207 (Hamburg, Germany); mid upper arm circumference (MUAC) using SECA 212 (Hamburg, Germany); body composition, that includes fat mass (FM) and fat free mass (FFM), using TANITA 240 MA (Tokyo, Japan); hemoglobin level using HemoCue® Hb 201+ (Angelholm, Sweden); and nutrition intake using Recall 3 x 24 hours method. All measurements were performed in the 1st trimester, 2nd trimester, and 3rd trimester. Some data were gained from the previous data, i.e. maternal birth weight (MBW) (F2), maternal birth height, maternal history of body weight from 1 to five years of age, and maternal history of body height from 1 to five years of each. Those variables were then associated to the offspring infant birth weight (F3) that measure using Baby scale SECA 334 (Hamburg, Germany).

During January 2014–September 2015, there were 129 women were pregnant but only 109 women completed first trimester measurements and only 105 and 91 completed the second and third trimester measurements, respectively. The prevalence of LBW was 18% and 17.8% for F2 and F3 respectively. There is no significant difference between IBW of women with LBW history and women with normal birth weight (NBW) history (p=0.24). In regression analysis adjusted to maternal age, parity, and frequency of prenatal care, the factors associated with IBW were MBW (p=0.04), maternal body weight in 1st trimester, 2nd trimester, and 3rd trimester (p=0.00; p=0.00; p=0.00), MUAC in 1st trimester and 3rd trimester (p=0.00; p=0.04), FM in 2nd trimester and 3rd trimester (p=0.01 and p= 0.00), and FFM in 1st trimester, 2nd trimester, and 3rd trimester (p=0.02; p=0.04; p=0.02).

In conclusion, factors that influence infant birth weight are history of maternal birth weight, maternal weight in each trimester, MUAC in trimester 1 and 3, FM in 2nd and 3rd trimesters, and FFM in each trimester.

1. Permadhi, I; Agustina, R; Prafiantini, E; Rachman, P H; Ansari, R; Cahyaningrum, F; Septiani, S; Anggono, B. 2017. Effect of Enhanced Counseling Using Complementary Feeding Recommendation Based on Linear Programming in Improving the Nutritional Status of Obese-Prone Children. Research Report. Department of Nutrition, Faculty of Medicine, Universitas Indonesia, Jakarta.

**FULL ABSTRACT**

Effect of Enhanced Counseling Using Complementary Feeding Recommendation Based on Linear Programming in Improving the Nutritional Status of Obese-Prone Children.

Inge Permadhi, Rina Agustina, Erfi Prafiantini, Purnawati Hustina Rachman, Ridwan Anshari, Fitrianna Cahyaningrum, Seala Septiani, Beatrice Anggono.

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Background: The prevalence of pediatric obesity has increased in many parts of the world including in Indonesia. Obesity during first two years of life could be resulted into permanent heath consequences. Dietary counseling has become one of the approaches used by practitioners to overcome the problem of pediatric obesity. Diets with a specific omega-6 (n-6)/omega-3 (n-3) fatty acid ratio have been reported to have favourable effects in controlling obesity in adults. However, development and application on an affordable local-based complementary diet by considering the ratio of these fatty acids for improving the nutritional status of overweight and obese children is lacking.

Objectives: We conducted studies in 2 phases with the following objectives Phase 1 1. Using linear programming, to develop an affordable optimised diet focusing on the ratio of omega-6 (n-6)/omega-3 (n-3) fatty acid intake for obese children aged 12–23 months. 2. To develop a valid and reliable Semi Food Frequency Questionnaire for assessing n-3 and n-6 intakes among Indonesian children Phase 2 1. To develop counseling tool and technique in delivering the message of an optimised diet menu for complimentary feeding 2. To investigate the effects of enhanced counseling using optimised diet based on LP to nutritional status and omega 3 fatty acids level among obese children age 12 to 23 months of age.

This study is expected to provide alternative intervention in improving quality counseling, which is one of the key to improve infant and young child feeding practices.

Methods Phase 1: In developing the optimised diet using Linear Programming, a cross-sectional study was conducted in two subdistricts of East Jakarta involving 42 normal- weight and 29 overweight and obese children, grouped on the basis of their body mass index for-age Z scores and selected through multistage random sampling. A 24-h recall was performed for 3-nonconsecutive days to assess the children’s dietary intake levels and food patterns. We conducted group and structured interviews as well as market surveys to identify food availability, accessibility and affordability.

In developing a valid Semi Food Frequency Questionnaire, the same cross-sectional study was conducted by selecting 89 healthy children through multistage random sampling of East Jakarta. Dietary intakes were assessed using the SFFQ and a 3-day non-consecutive 24-h recall. Randomly selected children (n=35) were assessed for plasma phospholipid fatty acid (PFA). In total, 78 food items in the SFFQ, as in the Thai, Vietnamese, and American food composition databases, were validated using dietary recall and PFA. The SFFQ was readministered after 4 weeks to assess its reproducibility. The validity and reproducibility of the SFFQ were determined by Bland–Altman analysis.

Phase 2: A cross-sectional study was conducted in two subdistricts of East Jakarta involving 42 normal-weight and 29 overweight and obese children, grouped on the basis of their body mass index for-age Z scores and selected through multistage random sampling. A 24-h recall was performed for 3-nonconsecutive days to assess the children’s dietary intake levels and food patterns. We conducted group and structured interviews as well as market surveys to identify food availability, accessibility and affordability.

The design of this study is a randomized controlled trial and approved by the Faculty of Medicine, Universitas Indonesia (858/UN2.F1/ETIK/2014). Reporting of this RCT adheres to the guidelines set out in the CONSORT statement. This study was conducted in June to December 2015 in the East Jakarta, Indonesia. 12-23 months old children with BMI for age z score (BAZ) > +1 SD, not planning to move during intervention were recruited with following exclusion criteria had serious disease, physical disability, and twin children.

Results: Phase 1: Development of enhanced optimized diet. The median intakes of almost all essential fatty acids in the first SFFQ and the mean values of the 3-day 24-h recall data were comparable (no significant difference; p>0.05), except for the total n-3 PUFA, ALA, total n-6 PUFA, and LA. A large discrepancy in the total n-3 and n-6 PUFA intakes was observed, followed by the ALA and LA intakes, because ALA and LA were the main sources of total n-3 and total n-6 PUFAs, respectively. The SFFQ tended to record higher estimations than did the 3-day 24-h recall for the aforementioned nutrients. Furthermore, the median intakes of all essential fatty acids between the first and repeated SFFQ administration were comparable.

Development of valid SFFQ: According to the Bland–Altman and prior logtransformed graphs, the mean differences for all essential fatty acids between the first SFFQ administration and 3-day 24-h recall were nearly zero, except for total n-3 and n-6 PUFAs, ALA, and LA. To ensure that the bias or difference was acceptable from a nutrition perspective, the regression line was subjected to a fitting process to assess whether there was any correlation between the differences and averages from both methods. Most essential fatty acids, except for AA, exhibited positive linearity or magnitude dependency (p < 0.05). The differences between the SFFQ and 3-day 24-h recall intakes increased positively with the mean intakes. As suggested by Bland–Altman, log transformation was then used to obtain a clearer interpretation. The result also implies that the amounts of the essential fatty acids estimated in the SFFQ were approximately >1.5 times higher than those estimated in the 3-day 24-h recall.

Furthermore, this study estimated the absolute validity by comparing the intake from the first SFFQ with plasma phospholipid fatty acid content through a correlation test that was divided into two parts: nonadjusted and adjusted. The nonadjusted correlation test revealed a nonsignificant correlation between the first SFFQ and plasma fatty acid content for almost all essential fatty acids, except for LA (r=0.37, p=0.04), thus indicating a moderate correlation. This result was then confirmed through further analysis by performing a partial correlation test to adjust for other variables that can be considered as possible factors affecting the correlation between dietary intake and plasma fatty acid content. The adjusted correlation coefficients exhibited significant correlation for total n-6 PUFA and LA, after controlling for the weight-for-age z score and age. A positive correlation was identified between the SFFQ and plasma concentration of DHA, EPA, and ALA, indicating that the higher the intake of DHA, EPA, and ALA was, the higher the plasma concentration was, except for total n-3 PUFA and AA. However, these correlations were not statistically significant.

Phase 2: Randomized trial. Three types of affordable optimised 7-day diet meal plans were developed on the basis of breastfeeding status. The optimised diet plan fulfilled energy and macronutrient intake requirements within the acceptable macronutrient distribution range. The omega-6/omega-3 fatty acid ratio in the children was between 4 and 10. Moreover, the micronutrient intake level was within the range of the recommended daily allowance or estimated average recommendation and tolerable upper intake level.

Conclusion: Phase 1. The developed SFFQ is relatively valid and reliable for estimating PUFA intakes in Indonesian children aged 6–23 months. However, total n-3 PUFA, ALA, total n-6 PUFA, and LA were poorly estimated by this SFFQ. The application of the proposed SFFQ to other populations should be adopted and interpreted with caution, because this SFFQ was developed by including mothers or cares with a medium-high education level and because the SFFQ estimation was not consistent with the plasma phospholipid content for some essential fatty acids. Phase 2. Enhanced counseling provides benefit in improving knowledge of the caregivers, but its effect on nutritional status and omega-3 fatty acids level may need further investigation. Even though control group who get standard counseling also gained an improvement, the enhanced counseling with additional information on omega-3 FAs might provide benefit in addition to standard one to treat at-risk children. It was evidently proven on this study that intervention group had significant better knowledge improvement. In addition, this study suggests to provide population-specific menu recommendation rather than general menu to increase compliance.