SEAMEO RECFON

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- Selected Abstracts -

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Southeast Asia still faces major challenges in combating malnutrition, especially among women, infants, children and adolescents. Studies show that the malnutrition are mainly caused by inadequate nutritional intake. Meanwhile, many nutrient-dense food resources are available in this region and potentially solve the issue of the nutritional inadequacy.

The use of locally available nutrient-dense food resources has also been emphasized by WHO and UNICEF in the Global Strategy for Feeding Infants and Children. The strategy highlights the importance of creating an affordable, locally available, and contextual complementary food recommendations. The recommendations should take into account cultural diversity and food availability that may create long-term improvements in the practice of supplementary feeding for malnourished population.

Linear programming (LP) is an optimization method that can be used to compile an optimal but realistic, available, and affordable population-specific food-based recommendations which can meet energy and nutritional needs simultaneously. The customized guidance takes into account local food availability, food patterns, food portions, and costs. The LP approach is gaining more attention, especially after Optifood software was launched.

Optifood allows identification of problem nutrients and nutrient-dense foods, food subgroups and food groups. For approximately 10 years, the LP program has been used by researchers at SEAMEO RECFON to develop local Food-Based Recommendations (FBR) in Indonesia. This experience has also been shared with partners from other Southeast Asia countries such as Laos and Burma.

This is followed by technical assistance for program implementers at region/province/district levels by academe or other partners located in the respective region/province/district on development of health promotion messages to promote the FBR or Complementary Feeding Recommendations (CFR) to the community. In the later stage, with technical advise from SEAMEO RECFON, the academe or local partners are conducting evaluation of the FBR/CFR in improving nutrient intake and eventually nutritional status of the target groups.

SEAMEO RECFON’s expertise and experiences in formulating FBR/CFR through LP are worth sharing with and scaling up in other SEA countries to help improve the nutrition and health status of the region's population. The FBRs developed using LP are expected to strengthen effectiveness of nutrition education and other activities which promote healthy diet concept. Thus, the Centre is committing itself to be designated as WHO Collaborating Centre on Food-based Approaches for Nutrition and Health.
Linear programming for optimal diet

Umi Fahmida1

Affordable, available, and locally contextual food based recommendations (FBRs) that take into account cultural diversity and food availability is expected to result in long-term improvements in complementary feeding practices than general recommendations. Linear programming (LP) is an optimization method that can be used to identify optimal but realistic, available, and affordable food based recommendations to meet Recommended Nutrient Intakes (RNIs) of energy and nutrients. Using LP diet which come closest to RNIs can be identified while simultaneously take into account food availability, food patterns, food portions, and cost. "Optifood" is a software developed by WHO which uses LP to identify specific problem nutrients, identify nutrient-dense foods or food subgroups and compare alternative sets of FBRs/CFRs. Using LP the general food based dietary guideline in a country can be further translated into population specific FBRs to address specific problem nutrients in a given population given the food availability and food pattern. LP can be used to identify nutrient gap in order to design specific fortified products (nutrition specific intervention) and to guide specific nutrient-dense foods which should be planted such as in school and home gardening program (nutrition sensitive intervention). More recently LP has been used to optimize diet to ensure adequacy of diet not only for minerals and vitamins but also for fatty acids, expanding its potential use in developing optimal diet for non-communicable disease prevention.

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Effect of optimized food-based recommendation, biscuits fortified with essential fatty acids and micronutrients on cognitive performance of Myanmar school children

Several studies have assessed effect of micronutrients on cognitive performance of school children. However, no study has assessed combined effect of micronutrients and essential fatty acids (EFAs) based on actual nutrient gap. This study aimed to determine effect of optimized food-based recommendation (FBR) and fortified biscuits (FB) developed using linear programming (LP) on cognitive performance of primary school children. In Phase-1, LP was used to develop optimized-FBR and identify nutrient gap (RNI-%RNI from optimized-FBR) to formulate the fortified biscuit. In Phase-2, a six-month cluster randomized controlled trial among 7-9 year-old school children (n=252) was conducted in 12 schools in Nyaungdon Township, Myanmar with three intervention groups: optimized FBR with fortified biscuits (FBR+FB), optimized FBR (FBR), and control. Cognitive performance (using Wechsler intelligence scale), anthropometry and biochemical indicators (hemoglobin, serum ferritin, serum transferrin receptor, body iron storage, plasma alpha linolenic acid level) were assessed. Both FBR and FBR+FB had significant effect on cognitive performances (attention, memory, speed of information processing), weight-for-age Z-scores, serum ferritin, serum transferrin receptor and body iron storage but plasma alpha-linolenic acid level increased significantly only in FBR+FB. FBR+FB improved cognitive performances better than FBR on attention, memory, speed of information processing and executive functioning. Optimized FBR alone was not sufficient to meet adequacy of EFAs for these school children and its combination with fortified biscuits results in better outcome on cognitive performance. This finding support policy maker for further school-based nutrition promotion programs in Myanmar.

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Use of linear programming in improving the school feeding program and school gardening for primary school age children in the Philippines

Leila S. Africa

The Philippines' Department of Education is currently implementing school-based feeding and the school plus home vegetable garden programs in schools. The linear programming (LP) approach is currently being used to identify the nutrient gap among school children in order to improve the nutrient density of food served in the feeding program and to make the school and home gardening program more nutrition sensitive. Seven-day dietary assessment using 24-hour food recall, food weighing and food record among 100 school children whose ages are 6-9-year-old was conducted. Food environment survey for school children was also conducted in the municipality where the project is being piloted based on the food sources identified in the dietary assessment. Optifood software was used in identifying specific problem nutrients and nutrient-dense foods or food subgroups and in comparing alternative sets of food-based recommendation (FBR). LP was used to develop optimized FBR and identify nutrient gap to improve the 120-day school menu of the food-based feeding program. Specific indigenous and local crops were also identified to be planted in the school and home gardens and other nutrition-specific interventions were also specified to address the problem nutrients among school children. The optimized FBR for 6-9-year-old school children can improve the nutrient content of food served in the school-based feeding program and can help to identify which plants should be planted in the school and home gardening program.

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Partnership to translate guidelines into practices for optimal diet of Southeast Asian community

Indriya Laras Pramesthi and Umi Fahmida

South East Asian (SEA) region still faces great challenges in combating malnutrition especially amongst children and women of reproductive age. These problems have been attributed to inadequate nutrient intake from the diet. On the other hand locally available nutrient-dense foods or food subgroups are available which have potential to improve nutrient adequacy from the diet and therefore need to be identified and promoted as population-specific food based recommendations (FBRs) for these vulnerable group. In order to succeed this effort will require collaboration with those engaged in dietary data collection (such as academia or research institutions), program implementers, policy makers and other relevant stakeholders. Under “Model of partnership to translate guidelines into practices for optimal diet of Southeast Asian community” SEAMEO RECFON provides capacity building and technical advise for academe and program implementers on dietary data collection and Optifood to formulate population-specific FBRs, to implement these FBRs, to evaluate the effectiveness of FBRs in improving nutrient intake and nutritional status of the target groups and to disseminate the findings. Since 2015, capacity building on LP analysis using Optifood has been delivered for five countries (Cambodia, Indonesia, Lao, Myanmar, and The Philippines) and reached 181 personnel in 74 institutions in those countries. School-based and community-based models promoting these population-specific FBRs have been developed for various target groups including under-two children, school-aged children, adolescent girls, and women of reproductive age, pregnant and lactating mothers. The partners include Ministry of Health, Ministry of Education, local government, academic institutions, professional organizations and international NGOs.

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Oral Presentation Session
School canteen and school garden:
Potential learning venues for building a healthier school food environment

Judhiastuty Februhartanty¹, Luh Ade Ari Wiradnya²

School has been receiving much attention for cultivating good nutritional practices that prepare students to enter adulthood. Nevertheless, we lack to understand the roles of school canteen and school garden in providing a healthier school food environment. This paper aims to share the process of the development of two guide books for engaging students with experiential learning on food and nutrition related topics through school canteen and school garden. Each book was developed through a workshop that involved teachers from different school levels, as well as other parties involved in canteen management and its surveillance. Each contributor wrote a section based on his/her experience. At least one reviewer from another organization having experiences with some school-based innovations was invited to provide comments and suggestion on the books. The final guide book on school canteen documented 11 best practices shared by 12 contributors from primary, junior high, and vocational schools, canteen management of a private school, and public health centers. These best practices addressed lessons learned on school policies, canteen management, nutrition education, surveillance and control system, and partnership. The final guide book on school garden presented 30 ideas for teaching nutrition in the primary, junior high, and senior high school levels. All lesson plans were written by 12 teachers using school garden as media for nutrition education. Further follow-up is needed to see the influence of the books in shaping students' preference of healthier food choices at school and finally on their healthier nutritional practices.

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Intervention of The Nutrition Goes to School Program for Adolescents in Malang District, East Java: Baseline Report

Indriya Laras Prameshti¹, Grace Wangge¹, Aziz Jati Nur Ananda¹, Evi Ermayani¹, Dwi Nastiti Iswari¹

Nutrition Goes to School (NGTS) program focuses on school-based nutrition promotion intervention approaches. In this report we present baseline data from our effectiveness study of NGTS intervention among adolescent in Malang, East Java. This report was part of a 6-months pragmatic experimental study. The intervention group received full intervention from the NGTS program: training for teachers on how to deliver nutrition education/promotion to students; strengthening the school’s healthy canteen and development of school nutrition gardens; strengthening school policy; introducing information system for monitoring. The positive control group only received nutrition education for teachers. The impact of NGTS program was measured by comparing the nutritional status, health and physical endurance of students at baseline and end-line of the study. There are 368 students from 4 schools recruited as intervention group; and 290 students from 4 schools as control group. There was no significant differences in nutritional status between the two groups. In total, 7.8% of students were obese and 12.0% were overweight. Mild anemia affects 13.1% of students, and the majority of students have low-moderate level of physical activities. The level of consumption of green vegetables and vegetables that contain a lot of vitamin A is relatively low (35% and 27.2%). Eggs, milk and processed foods is only consumed by less than half of the subjects (44.7% and 30.1%). We found quite high number of students with overweight-obese, inadequately dieted and had lack of physical activities and fitness in the baseline. NGTS intervention may change this findings towards a better direction.

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Evaluation of Stunting-Related Health Programs in Stunting Alleviation in Ketapang, West Kalimantan, Indonesia

Dian P M Saraswati, Sari Kusuma, Helda Khusun, Grace Wangge

To alleviate stunting, the Ministry of Health has implemented 11 stunting-related health programs in Indonesia. This study aimed to evaluate and further recommend the improvement for health programs for stunting alleviation in Ketapang, West Kalimantan, one of the regency with high prevalence of stunting. This was a program evaluation study using mixed qualitative-quantitative approach. For data collection, we conducted in depth interview, observation, and document review of stakeholders' data from district level to the village level. One hundred mothers from ten villages which represents geographical variation were chosen as respondents and were asked using standard questionnaires. There was lack of feedback documentation from district to primary health centers (PHC) and from PHC to village midwife. At village and sub-district level, nutrition officer and village midwife were overloaded with all the programs and their own routine tasks, so that program implementation was not optimal. There was lack of synchronization between various nutrition related health programs and coordination. Moreover, the coverage area of the program and targeted beneficiaries were wide, thus the targeted beneficiaries felt they need more information about the program they received. To optimize stunting related health programs, more human resources are needed. Additionally, a better established and synchronized report and evaluation mechanism should be developed to monitor and evaluate the program implementation.

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Determinants of Stunting among Infants 0-11 Months Old in Outermost Area of Indonesia: A Follow up Study in Sambas District, West Kalimantan

Eflita Meiyetriani¹, Arindah Nur Sartika², Meirina Khoirunnisa², Evi Ermayani³, Aziz Jati Nur Ananda¹, Indriya Laras Pramesthi¹

Till date, childhood stunting is the most challenging consequence of under nutrition as it is associated with suboptimal brain development and decreased earnings and increased risk of metabolic diseases in adult life. Sambas is one of the outermost districts in Indonesia and has a high prevalence of stunting. In 2016, a formative study conducted on pregnant women revealed that certain factors during pregnancy lead to poor birth outcomes and subsequent childhood stunting. To determine the significant factors that contribute to stunting, a study assessing the relationship between factors associated with the period from pregnancy to that after birth is required. This is a follow-up study of the previous investigation on pregnant women and focused on stunting in 559 infants aged 0–11 months. The pre- and postnatal determinants of stunting were analyzed using multivariate analysis using logistic regression. In this study, the prevalence of stunting was 20.8%. Low birth weight [odds ratio (OR) = 2.867 (CI=1.151–7.141), p = 0.024, 95% confidence interval (CI)], diarrhea (OR = 2.642 (CI=1.3525–1.63), p = 0.004, 95% CI), and poor knowledge on Infant Young Child Feeding (OR = 2.046, p = 0.041, 95% CI) were significantly associated with stunting. Short maternal stature [OR = 1.905 (CI=0.971–3.734), p = 0.061, 95% CI] and preterm birth [OR = 2.312 (CI=0.886–6.033), p = 0.087 95% CI] were assumed to be the confounding factors. Furthermore, low birth weight had the strongest association with stunting. Policy makers especially in the government should recommend measures to prevent stunting in children so that the vicious cycle of stunting will not happen in later life, thus preventing an increase in the prevalence of stunting.

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Development of Intersectoral Collaboration Model for Nutrition Intervention in Post Disaster Rehabilitation Phase in East Lombok

Grace Wangge¹, Anak Agung Sagung Indriani Oka¹, Ahmad Thohir Hidayat¹, Pathurrahman³, Risatianti Kolopaking¹, Umi Fahmida¹

In August 2018, a 7 Richter earthquake struck the island of Lombok, Indonesia. This study describes multisectoral collaboration model for post disaster nutrition recovery program developed for under-five children in East Lombok. We conducted literature review on post-disaster nutrition recovery program and basic nutrition profile of East Lombok to develop the program. Subsequently, a situational analysis was conducted to include local context. Lastly, the draft intervention model was discussed with local education and health officers for inputs and to encourage their ownership of the program and ensure sustainability of this model. The draft of intervention model was as follow: Early Child Education centers (PAUD) are appointed as nutrition recovery centers. Mothers of the under-five children will attend weekly meetings at nearby PAUD where they will be taught by trained PAUD teachers to feed their children with the optimized food-based recommendations (including liver and fish floss as the local nutrient-dense foods) and to provide appropriate psychosocial stimulation for their children (which include language and science-based activities). Trained primary health care centers staffs will monitor the activities monthly and provide technical guidance when needed. Local education and health offices will evaluate the program after 6 months of intervention. A 6-month try-out in the affected area will be conducted to test its effectiveness. PAUD has potential to be a center for post-disaster nutrition recovery program for under-five children. Involvement of relevant stakeholders including PAUD teachers, public health centers and local authorities, as well as adjustment to local context and potentials are important part of this model.

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A Nutrition Educational Module Improves Knowledge of Nutrition among Preschoolers

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Objective of this study was to evaluate the effect of the nutrition educational module on knowledge of nutrition among preschool children. A quasi-experimental study with pre-post-test and control group design was used for this study. This study was setting at 5 government kindergarten in 3 different districts at Riau Province, Indonesia. 676 students participated in this study that were divided into 307 for intervention group and 357 for control group. Intervention of this study was 12 activities of nutrition education that given in four consecutive days a week for intervention group based on Nutrition Educational Module for Preschool Children. All of the activities were delivered by teacher that had been trained for the module prior the activities. Monitoring and evaluation questionnaires were used during the activities took place by trained observer and teachers. In-depth interview was given to selected teacher representing each school after the intervention was completed to evaluate the modules and activities. Changes in student nutrition knowledge before and after the intervention was assessed using questionnaire. There was an increased in nutrition knowledge score from 75.70 to 81.54 among control group, and 74.51 to 88.29 among intervention group (all P < 0.000). Students and teachers also found that the module was applicable and easy to understand hence would improve knowledge of nutrition. Nutrition educational module for preschool children could improve nutrition knowledge among preschool children.

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Nutritional status and health situation of under-five children post 2018 earthquake in East Lombok

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Any form of disaster brings survivors to a risk of mortality due to acute malnutrition. Disruptions of access toward clean water, food, and health services have negative consequence to nutritional status of vulnerable population, particularly young children. A cross sectional survey was conducted in 2 sub-districts devastated by the earthquake. For this study, 20 children age 6-49 months from each of the 24 clusters (total of 480 under five children) were assessed in December 2018, four months after the first earthquake hit Lombok. Anthropometry assessment of BMI-for-age (wasting), height-for-age (stunting), and weight-for-age (underweight) was used to measure the nutritional status. Hemoglobin level was measured by HemoCue. Primary caregiver (mother or other family member) was interviewed to obtain information on demographic characteristics, hygiene and sanitation, child morbidity, and feeding practices. Wasting, stunting, and underweight prevalence were 10.8%, 29.2%, and 27.3%, respectively. Prevalence of children with moderate to severe anemia was 44.2%. The prevalence of each indicator was higher in boys than in girls. Two weeks prior to the survey, 85.4% children had diarrhea. Open defecation was practiced by 12.1% of family that had their toilet impaired (14.8%). Food diversity in 67.9% children was lacking. Nutritional status post disaster showed high prevalence of both acute and chronic undernutrition as well as micronutrient deficiencies. Nutrition intervention is urgently required in order to prevent further deterioration of nutritional status as well as its negative consequence on development in under-five children.

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Optimizing complementary feeding model with and without micronutrient home fortification using linear programming approach

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The low quality and quantity of complementary feeding (CF) contributes directly to the high incidence of malnutrition in under five children in Indonesia. Alternatives to improve CF include locally available nutrient-dense foods and home fortification with micronutrient powder (MNP). This study aims to develop optimized complementary feeding recommendations (CFR) using local food that is affordable, available and in accordance with culture using linear programming (LP) approach with and without MNP. Cross sectional study was conducted on 304 children aged 6-23 months in Susut District, Bangli Regency, Bali Province. Data collected included social demographic characteristics, breastfeeding, anthropometric, and dietary data. Nutrient composition in micronutrient powder (Taburia) was also included in LP analysis using Optifood software. Most children had normal nutritional status and 86.2% of them were still breastfed. The median dietary diversity score was 3 and most children had low energy intake and low nutrient density. LP analysis indicated that problem nutrients in the 6-11 month age group were calcium, niacin and zinc, while in the 12-23 month age group was calcium. Both CFRs with and without MNP can meet nutrient adequacy (≥65% RNI in minimized case) for all nutrients. MNP of once weekly is sufficient instead of 3 times weekly as currently recommended in the program. It is necessary to evaluate the effectiveness of optimized CFRs with and without MNP as well as MNP-alone in improving nutrient intakes, nutritional status and gut microbiota.

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Food Habits and Patterns of Protein Consumption in Indonesia

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Nutrition transition describes people's dietary changes and is determined among others by economic factors and eating cultures. This paper aimed to assess the association between eating habits and protein consumption pattern to understand the transition in Indonesia. It is derived from the “Socio Cultural Research on Protein Transition (SCRIPT)” conducted cross-sectionally among adult male/female aged >=19 years (n=1728) in 6 most populated Indonesian provinces during February-April 2018. Eating habit was limited to food event number cooking/buying for meals and meals out of home. Protein consumption was assessed using Food Frequency Questionnaire. The pattern was categorized as monthly animal and plant protein consumption frequency (APF and PPF) and 3 patterns derived from principal component analysis (PCA), i.e. Plant-based food pattern (P1), Chicken Maized based food pattern (P2) and “jajanan” pattern (P3). Food event number was not different by urban/rural. Cooking was significantly higher in rural, while eating out was in urban area. Animal protein consumption frequency (APF) was higher in urban; while plant protein consumption frequency (PPF) was in rural area. P1 score was higher in rural and P2 and P3 score in urban area. APF, PPF, P1 and P2 score was significantly higher at higher food event number. Cooking was associated with lower PPF, higher P1 and lower P2 and P3 score. APF and PPF was not different by eating out habit, but eating out during lunch was associated with higher P2 and P3 score, and dinner at home with higher P1 score. The analysis implied that shifting of eating habit toward more non-traditional pattern may lead to transition of food consumption pattern, for protein in particular. Dealing with dietary transition needs to consider eating habit.

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Remaja ASIK: The effect of optimized food based recommendations on cognitive performance among adolescent girls

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School based program have beneficial effect on healthy lifestyle behaviors, psychosocial outcomes, and academic performance in adolescents. However, the effectiveness of optimized food based recommendations (FBRs) developed using linear programming approach has never been studied in adolescent girls. The aim of this study was to assess the effect of optimized FBRs on cognitive performance among adolescent girls. A 20-week intervention was performed in Malang District, East Java, Indonesia, among 239 adolescent girls aged 14-18 years. Optimized FBRs was developed using linear programming and “Remaja ASIK” is the Indonesian tagline for this study which means Active, Healthy, Smart, and Creative. Cognitive performance was measured in this study using Digit Span, Coding, Intelligence Structure Test (IST), Raven’s Standard Progressive Matrices (RSPM), and included attention, short-term memory, processing speed, and predictive IQ. Outcome variable were analyzed by repeated measures general linear model test. After intervention, hemoglobin level decreased in both group (p>0.05). None of cognitive tests were significantly different between groups, either in baseline or endline after adjusted for predictive IQ. However, digit span forward in intervention group increased by one point but no change was observed in the control. While there was no significant difference between groups on cognition, the intervention group tend to benefit in attention and short-term memory. The lack of effect on cognition may be attributable to the fact that most of subjects had mild but not moderate/severe anemia.

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Information-seeking behavior and family support characterize mother's consistent compliance towards four national maternal and child nutrition programs

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Despite the importance of the first 1000 days of life, there is high proportion of pregnant women and young children in Indonesia who missed the opportunity to acquire better nutrition during this period by having low compliance towards the existing national maternal and child nutrition (MCN) programs. The study aims to explore factors supporting mothers for having consistent good compliance towards the four MCN program during the first 1000 days, i.e. maternal iron-folic acid supplementation (IFAS), continued breastfeeding (BF), complementary feeding practices (CF), and vitamin A capsule supplementation (VAS). In-depth interviews were employed to 48 mothers of children aged 6-23 months in West Java (urban and rural). Among the informants, 23 complied towards IFAS, 39 towards BF, 15 towards CF, and 40 towards VAS. Regardless their variation on educational level, type of family, maternal employment, socio-economic condition, and birth order, nine mothers managed to have consistent good compliance towards the four programs. They were characterized by their good health-seeking behavior, active information-seeking on pregnancy and child care, and possession of active and continuous support from the husband. The information helped mothers managing the challenges particularly breastfeeding for working mother, dealing with difficult-to-eat child, and preparing variety foods with simple preparation. The husband reminded mothers to take the IFA tablets, looked for information, and fed the child. The findings highlighted the need to bring such maternal and child care information closer to the mothers, as well as including husband as main target of the MCN program promotion, in addition to the mothers.

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Safety and Nutrition Quality in School Canteen: Study case in Malang

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Stunting and anemia are prevalent among school-aged children in Indonesia and food sold in school canteen contribute to the quality of food intake of school children. However, a limited study on food quality sold in school canteen. Therefore a study aiming to assess the nutritional quality and safety of foods sold in Canteen is important to evaluate the magnitude of the problems, particularly in high schools. This research employed cross-sectional design in which all variables were observed or measured nearly at the same time. Food samples were collected 26 from participated junior and senior high school in Malang City. Nutrients content of food were calculated using NutriSurvey® software, the food samples were analyzed for the presence of formalin, borax, and rhodamine B. Assessment of hygienic and sanitation implementation was carried out to school canteens with a checklist. Results showed that the number of sold foods in 26 school canteen which meets daily energy requirement and protein of students was 40.0% and 36.2% respectively. Vegetables were consumed in a small amount. Overall hygiene and sanitation score was 73.9%. However, there was an exception to sanitation facilities at a certain establishment which could explain microbial contamination occurred. Formalin, borax, and rhodamine B were found in 42.31%, 29.3%, and 5.38% of food samples respectively.

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Poster Presentation Session
Problem nutrients identified using linear programming in underfive children and pregnant mothers in 10 stunting prioritized districts in Indonesia

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Stunting and anemia amongst mothers and young children are attributable to poor nutrient intakes. The aim of the study was to identify problem nutrients in underfive children and pregnant mothers in 10 stunting prioritized districts in Indonesia. Linear programming analysis (LP) using Optifood was used based on dietary data collected using single 24-hour dietary recall in Pemantauan Konsumsi Gizi conducted by Ministry of Health from 10 stunting prioritized districts in Indonesia. Problem nutrient was defined as nutrient which did not meet 100% Recommended Nutrient Intake (RNI) based on FAO-RNI in the 2-best-diets (Module-2 Optifood). Amongst underfive children, top three problem nutrients were folate (27/40 age-site groups), zinc (24/40 age-site groups) and iron (13/40 age-site groups). The number of problem nutrients ranged from zero (for 24-25mo in Brebes, Cianjur, Pemalang; 36-59mo in Cianjur, Pemalang) to six nutrients (for 6-11mo in Lampung Tengah, Rokan Hulu). Amongst pregnant mothers, top three problem nutrients were iron (8/10 sites), folate (5/10 sites), and calcium (2/10 sites). The number of problem nutrients ranged from one (in Pemalang) to six nutrients (in Lanny Jaya). The findings showed that problem nutrients identified using LP was in line with nutritional problems in underfive children (stunting and anemia) and pregnant mothers (anemia). Food-based recommendations which promoted nutrient-dense foods suited to the problem nutrients in each area need to be promoted and are expected to more effectively improve feeding practice of underfive children and dietary practice of pregnant mothers.

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Food Insecurity, Homestead Food Production and Source of Food at The Borderline of Indonesia, Study Case: Sambas Districts, West Kalimantan

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Food insecurity remains problems in many areas of Indonesia including the borderline areas. This study would like to assess food insecurity and the homestead food production in Sambas District, West Kalimantan, as borderline area. This study was a follow up study from a cross sectional study to pregnant mothers conducted in 2016. Among 559 subjects, 484 could be followed up and continue become subject of the study. There were 18.8% household categorized as food insecure, while other were food insecure with marginal, low and very low food insecure (22.5%, 46.7% and 12% respectively). The finding is in line with the food source of household where many households fulfill their food buy purchasing from domestic market (vegetables, fruit, poultry, livestock and meat: (86.3%, 75.7%, 84/8%, and 82.1% respectively). In the contrary, 40.3% of Households grew vegetables, 53.9% owned fruit tree, 55.4% raised poultry. There were only 4.1% household raising livestock. There were high prevalence of food insecure households. Purchasing food as main food source in the household while households have ability to grow or raise their food source were finding that could be assessed further.

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SYMPOSIUM:
Protein Transition and Amino Acids Profile in Malaysia and Indonesia
Sources of protein in Malaysia and Indonesia: a comparative analysis

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Protein intake in the diet is essential for proper growth and functioning of the body. The objective of this study is to identify similarities and differences in the sources of protein in Malaysia and Indonesia. The sources of protein are evaluated based on the protein screeners using Food Frequency Questionnaire (FFQ) and 24-hour diet recall and analyzed using software Nutritionist Pro (Malaysia) and Nutri-Survey (Indonesia). Protein sources are categorized into animal protein (7 categories, fish, beef, pork, mutton, poultry, eggs and dairy) and plant protein (3 categories, cereals, legumes and tubers for Malaysia and other vegetables for Indonesia). The results showed that contribution of animal vs plant protein source to total protein were 54.4% vs 45.4% for Malaysians and 56.1% vs 43.9% for Indonesians. In Malaysia, animal protein sources which required killing contributed equally to the protein intake in both urban and rural. However plant protein contributed higher in the rural than the urban. In the urban, protein sources were mainly from poultry, pork, legumes and eggs while in the rural were fish and cereals. In Indonesia, animal protein intake was also higher in urban than rural area and influenced by region. Nonetheless, regardless of region, cereals contributed to the highest source of protein (27.4%15.4%), followed by legumes (21.6%22.3%). Legumes have high contribution to protein intake in East and West Java. As for animal protein, fish had very high contribution in West Sumatra and South Sulawesi while poultry in Bali. In conclusion, sources of protein intake were different between Malaysia and Indonesia. Animal to plant protein ratio intake in Malaysia was 6:4 while in Indonesia was 4:6. Considering animal protein is more complete in its amino acid contribution than plant protein, the population will be at higher risk of protein deficiency if plant protein is the major source of protein.

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Protein and values system: Malaysia and Indonesia comparative analysis

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This paper aimed to explore the reasons for protein consumption in Indonesia and Malaysia through the subjects' understanding on proper meal and protein hierarchy. This is part of a “Socio Cultural Research in Protein Transition (SCRIPT) study”, conducted using a qualitative method among adult male/female aged>=19 years in Jakarta, Indonesia (December 2017-March 2018) and in Kuala Lumpur, Malaysia (March-April 2013) with three focus groups and 17 individual interviews in Indonesia and one focus group and 20 interviews in Malaysia. Variations in the subjects' gender, education level, age, ethnicity, religion, working status, marital status, and living arrangement were considered. Pre-tested guide questions using participatory approach (i.e. food ranking and pictures) were used to delineate the concepts under study. Thematic analysis was done to understand the experiences. The findings suggest that people's understanding on the concepts were very much contextual depending on the prevailing norms that were related to foods commonly available in the area and their habitual practices. The actual consumption on the other hand was linked to the economic dimension, practicality, and palatability of the foods. Our understanding on these insights may help promote more varied sources of protein (both animal and plant-based) that fulfill the availability-affordability-palatability concept.

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The SEAMEO Regional Centre for Food and Nutrition (RECFON) is one of the 26 regional centres of excellence of the Southeast Asian Ministers of Education Organization (SEAMEO). SEAMEO is an intergovernmental organization established in 1965 among governments of Southeast Asian countries to promote regional cooperation in education, science and culture in the region.

SEAMEO RECFON was established in 1967 as a Regional Centre for Community Nutrition under the SEAMEO Regional Centre for Tropical Medicine (TROPMED) Network until it acquired its current name and status in 2011. The Centre carries out six mandates, namely: education, capacity building, research, information dissemination, community development, and partnership toward improving the quality of human resources in Southeast Asia in the area of food and nutrition. The Centre is hosted by the Government of the Republic of Indonesia through its Ministry of Education and Culture and is considered as a non-stock, non-profit regional organization. In addition, the Centre is located within the campus of Universitas Indonesia, and also serves as the University’s research centre on nutrition under the name of Pusat Kajian Gizi Regional Universitas Indonesia (PKGR UI).

A total of 282 alumni among whom are now holding strategic positions and leading nutrition development programs in their respective institutions and countries in the SEA region and beyond have benefited the Southeast Asian Nutrition Leadership Program (SEANLP) initiated by SEAMEO RECFON. The SEANLP is conducted under the auspices of the European Nutrition Leadership Program (ENLP) and is part of the Global Nutrition Leadership Platform together with ENLP and African Nutrition Leadership Program (ANLP). Aside from the SEANLP and through its other face-to-face and online training courses, the Centre has also built the capacities of over 5,000 professionals which include university and school teachers, researchers, community development workers and program managers from government and non-government sectors who are engaged with food and nutrition as well as health related activities.

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The Centre is currently operating under its 2nd 5-Year Development Plan which focuses on “Pre-maternal and Child Nutrition with Emphasis on School Programs and Food-based Approach”. Thus, the Centre implements two flagship programs called “Nutrition Goes to School (NGTS)” aiming to develop Active, Well-nourished, and Smart school children from primary to secondary schools, and “Early Childhood Care, Nutrition, and Education (ECCNE)” with the objective to facilitate the provision of an integrated environment for the growth and development of infant and young children.

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