



Neys-van Hoogstraten Foundation



Third International NHF Workshop

Food and Nutrition security in transition

“Livelihoods, Food Cultures, and Patterns in Food Consumption and Behaviour in (Southeast) Asia”

BOOK OF ABSTRACTS



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1. Food cultures



PAPER

An Exploration of the Commonness, the Potential, and the Future Implications of Entomophagy in the Vientiane Area, Lao PDR

– FW/LA-30

Insects are eaten in many parts of the world and are regarded as a common food item. In this paper, we explore the commonness of entomophagy in the rural and urban areas in the Vientiane area, Lao People's Democratic Republic, and make a call to further incorporate edible insects in research in food security, dietary quality, and poverty alleviation.

From April to July 2008, in-depth interviews and observations were made in one urban village in Vientiane Capital and one rural village approximately 30 km from Vientiane. The collection of some of the most common edible insect species is explained in detail and we made assumptions on the collection efficiency. Edible insects are frequently consumed in the rural area but to a much lesser degree in the urban area. Nevertheless, we observed a large variety of edible insects in the city markets, even in large quantities. Edible insects, though mainly crickets, are also offered in local and tourist restaurants throughout Vientiane. We visited small-scale house farms where crickets are reared, both as household food supply and as an economic means. The commonness of edible insects as a food item follows from frequent rural consumption, urban market availability, local and tourist restaurants and bars offering edible insects, and small-scale house farms rearing crickets.

With rural Lao populations depending to a large extent on non-wood forest products (NWFPs) for their subsistence, we stress the importance of including the nutritious edible insects in studies concerned with food security, dietary quality, and household economics. Also the threat of overexploitation needs to be addressed, while on the other hand, the insects' high biomasses and wide availability in every habitat may lend them excellently as umbrella species conserving other NWFPs.

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POSTER

Characteristics of Working Mothers Who Practice Exclusive Breastfeeding – IN 180

Breastfeeding is recognized to be important for infant, mother and community. However, exclusive breastfeeding practice is generally low due to multifaceted factors internally within mothers themselves and also the surroundings. In addition, studies have consistently found that maternal employment outside home is related to shorter duration of exclusive breastfeeding. Of all these challenges, interestingly there are some mothers who manage to exclusively breastfeed their infants. Therefore, this report aims at exploring the characteristics of among working mothers who practice exclusive breastfeeding.

The original study population was non working and working mothers who have infants aged around 1 to 6 months. The study design is an observational study with a mixed methods approach employing quantitative study (survey) and qualitative methods (indepth interview) in sequential order. In addition, indepth interviews with fathers, extended family members, midwife/other health personnel, and supervisors at work, also observation to public places were also included to accomplish a holistic picture of the situation.

The exclusive breastfeeding in this study is regarded as "current exclusive breastfeeding practice" indicated by the WHO definition. Overall, the study found that the exclusive breastfeeding practice is 11.9% and the prevalence was significantly lower among working (4.8%) than non working mother (16.6%).

It was found that mother's self efficacy and home environment especially support from the father were prevailing factors to influence exclusive breastfeeding among the working mothers. Similarly during the qualitative study, it was implied that internal motivation is a strong contributing element to successful exclusive breastfeeding practice which is in line with the findings from the quantitative study. In addition, based on the qualitative study, supportive facilities at workplace of breastfeeding mothers and skills about lactation management were contributory factors to successful EBF among working mothers.

Key words: *exclusive breastfeeding, maternal employment, mother's motivation, environments surrounding the mother, Depok, Indonesia*

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PAPER

Socio-Cultural Aspect of Nutrition and Food System of Baduy Tribe in Indonesia – IN 192

This research is 12 months study on community nutrition covering the socio-cultural aspects of nutrition and food supply. It was carried out in Baduy community who still strongly hold the tradition of their ancestors.

Cultural elements (beliefs, taboo, like and dislike for certain food, gender relations) create a people's eating habit which sometimes contradicts with the principles of nutrition science. Culture underlies all acts of Baduy people. The Baduys observe many mystical taboos. There are several social institutions in Baduy, which maintain in securing their food availability for their daily consumption food in Baduy's community.

The community nutritional status, reflected from the nutritional status of under-five-year children, is greatly affected by the food distribution and consumption as well as health condition. The consumption and distribution of food as the final end of a food system is closely related to food preparation (frying, smoking, stir-frying, roasting, boiling, steaming, salting), preservation (post-harvest treatment), storage, food supply (production, gathering, purchase, exchange, and gifts). All of these variables determine the food habit adopted by a community.

As tourism area, Baduy visited by many people outside Baduy regions, who directly and indirectly bring and introduce different culture particularly consumption goods to Baduy. The presence of visitors also encourages them to have new livelihoods.

Although they live far from what we called modernization, by their culture, Baduy societies never have experience with famine problem, yet because of the culture, Baduy societies get the nutrition problems too, especially for children.

To solve food and nutrition problems like in Baduy community, cultural relativism (anthropological perspective), can be applied to make the food and nutrition policy programs. To train the Baduy people how to plant soybean and make tafo and tempe (soybean cake) to fulfill their protein deficiencies, is better than to destroy their taboo for raising animal or cattle which they have practiced for hundreds of years.

Key words: *socio-culture, food, and nutrition*

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POSTER

Indigenous food Sources in the Culture of an Ethno community in Northern Philippines

- PH 159

The project classified the Indigenous Food Sources into food groups and documented how the community use, prepare these foods and the frequency of consuming them. It also considered gender issues and activities related to indigenous foods, the respondents' perceived effects of these foods to sustenance and health and biodiversity loss of indigenous food sources.

The indigenous food sources were classified into cereals, roots and tubers, vegetables, legumes, fruits, mushroom, meat, fish, shell fish, algae, edible insects and beverages. These foods are found mostly in swidden farms, the forests, rice fields and backyards and are available seasonally or year round if cultivated. It is mostly the women who gather the food in the wild or cultivate them in the swidden farms. Consumption depends on the seasonal availability. Part of the diet of the community comes from indigenous food sources. Elderly respondents claim that during their childhood when food were sourced from the wild and in the swiddens, the common cold and diarrhoea were the only illnesses. In recent years however, more complicated diseases were observed and perhaps could be a result of commercially produced food. Indigenous food sources are observed to be getting scarce as a result of forest destruction, availability of commercial foods and improved farming practices.

The poster shall include samples from each of the food groups, their habitat and women engaged in the trade on indigenous food sources.

There is a growing need to conserve indigenous food sources owing to the recognition of the importance of food safety. In 2004, The Philippine government issued Executive Order 481 for the promotion of organic agriculture. This includes among others the development of organic Agriculture nationwide as a farming scheme, environmental integrity, food security and safety. Tables and photographs will be used in the presentation.

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POSTER

Livelihood Systems and Food Cultures of Upland Households in the Province of Tarlac, Philippines

- PH 177

This project is a comprehensive analysis of the upland households' livelihood systems and food cultures. It generated baseline data on the biophysical and socio - demographic - economic characteristics; food consumption patterns, food culture and habits; survival strategies, problems, and proposed interventions to ensure food security, increase household budget, and conservation and development of genetic resources in the uplands.

Methods used in data collection were key informant, survey, documentary analysis, ocular visits, and observations. The 220 upland farm households interviewed came from three representative upland villages including nine sitios and sub-sitios in Tarlac province. Their average age is 40; composed of Christians, "mestizos", and Aetas; mostly married with average household size of five and an average education of Grade IV. Almost one-half belonged to low level of living.

The upland farm households engaged in diversified on-farm and off-farm work e.g. slash and burn farming, hired labour, gathering of forest products, hunting, charcoal production, fishing, cottage industries among others. They turned to internal and external institutional systems for support and assistance. Scarcity adjustment techniques undertaken were likewise documented. Out migration during lean months enabled the households to buy rice and other needs. Conservation methods used to prevent the risk of soil erosion and forest destruction, however were insufficient.

In terms of allocating household budget, majority considered food as their priority both during the dry and wet months and rice is regarded as the primary staple food. Upland households have access to wild resources to sustain their daily requirements. However, there is decreasing trend of food availability, hence; the settlers resorted to produce food items to supplement available food sources.

Their usual diet consists of rice, fish, vegetables, and boiled bananas or rootcrops. Special food items are served in bountiful amount during baptisms, birthdays, weddings, Christmas, etc. There are also food for special age groups such as infants, conceiving women, lactating mothers and sick children. Likewise, superstitious beliefs, recommended food and food taboos for some illnesses were documented. There were also food relating to or practiced as a rite or rites. These are strictly ordered traditional method of conducting and performing an act of worship or other solemn ceremony.

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POSTER

Promoting Consumption of Vegetables, Roots and Tubers Among Children in the Cordillera Region, Philippines

- PH186

RATIONALE

The availability of many indigenous vegetables, roots and tubers in the area, and the lack of information on the consumption of these specific crops is a misleading assurance that children do eat enough vegetables, roots and tubers, and that there is no need to do aggressive promotion to increase consumption.

OBJECTIVES

1. Established baseline data on the availability and consumption of vegetables, roots and tubers among children in the Cordillera region.
2. Determined changes in the consumption of vegetables, roots and tubers after integrating promotional activities in regular health and nutrition programs of the schools and local government units.

BASELINE DATA RESULTS

1. There were 83 identified available vegetables, roots and tubers (VRT); 67 kinds were consumed by children. The seasonal availability of the top ranking VRT unanimously eaten in all sites in the Cordillera region will be presented as chart in the poster. A pamphlet on this 83 VRT will also be displayed.
2. Per capita consumption of the top ranking VRT ranges from 43-169g and the low ranking VRT from 13-47g. This will be presented as table in the poster.
3. Mean per capita consumption is 75g that differed significantly across locations and among age groups, but not between boys and girls or between intervention group of pre-school and school-age children. This will be presented in tables.
4. Mean adequacy of VRT consumption is less than 100% of the recommended quantity, and that only 28% of the children eat sufficient quantity. This will be presented in chart.

ACTION

VRT consumption promotion was integrated in the regular health and nutrition programs of the schools and local government units notably during nutrition month celebrations. These will be presented as pictorials.

EVALUATION/CONCLUSION

Mean per capita consumption at 92-151g, mean percentage adequacy (87-88%) and percentage of children meeting requirements (34-38%) increased during and just after the conduct of promotional interventions. More than 50% of the children increased their VRT consumption especially with those that implemented supplemental feeding and nutrition education. This will be presented as tables.



RECOMMENDATIONS

Existing policies to promote health and nutrition concerns in schools and from the national to the local government could be an avenue to continuously promote the consumption of indigenous vegetables, roots and tubers. However, there is a need to evaluate implementation guidelines and augment available resources in order to enable grassroots or frontline workers to implement sustained promotional activities to improve consumption of local crops.

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PAPER

Consumption of wild food plant foods in Northeast region of Thailand: Kalasin province

- TH 179

Foods in different regions of Thailand are distinctive in taste, appearance, and ingredients, especially food plants. Food plants in each region vary by its geography. They generally are young leaf, flower or fruit collected from tree, bush, vine, and herbaceous plant. This study was conducted in Kalasin, a province in Northeast of Thailand. Two studied villages locate in suburbs of the city of Kalasin. Vegetables and mushrooms consumed by villagers mostly are wild plants gathered from rice paddy field, hillocks in fields, empty land around house, grove or purchased from market. Fourteen culinary genres; kaeng, aòm, tòm sòm, náam yaa, súp, pòn, mòk, lăam, oã, kâwy, lâap, tam, jàew, and sòm phàk, are categorized. The culinary genres that often compiled in daily diet are kaeng, aòm, tòm sòm, súp, pòn, kâwy, lâap, tam or jàew. Vegetables and mushrooms are consumed either raw or cooked. Cooking treatments apply in Northeast region are parboiling, boiling, steaming, grilling and baking. Vegetables in kaeng, aòm and tòm sòm are always cooked. Those put in súp dishes or served with chilli sauces, pòn or jàew, can be either raw or cooked. Only raw vegetables are served with tam, kâwy and lâap. From individual interviews of 64 households, one hundred kinds of edible plants were stated. Eighty three of them consumed as vegetables such as young leaf or pod of lead tree (*Leucaena leucocephala*), water spinach (*Ipomoea aquatica*), bamboo shoot, ivy gourd (*Coccinia grandis*), brinjal, raw papaya, etc. Thirteen of them are herbs to give unique aroma or to mask strong meat odor, such as lemon basil, lemongrass, khayang (*Limnophila aromatica*), dill, etc. The rest, tew (*Gratoxylum formosum*), young tamarind leaf, chamuang (*Garcinia cowa*) and ob-ab (*Embelia sucoriacea*) are put to impart a sour taste.

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2. Food Consumption and Behaviour



POSTER

Handling, Acceptability and Consumption Pattern of Locally Produced Soy Products in Different Socio-Economic Groups in Java- Indonesia

- IN 166

The objectives of this research were to collect data on: (1) handling, (2) acceptability and (3) consumption pattern, of locally produced soy products in different socio-economic groups of population in Java-Indonesia.

This research was conducted in thirteen areas of Java island including Jakarta (Jakarta), Serang (Banten), Tangerang (Banten), Bekasi (West Java), Bogor (West Java), Bandung (West Java), Purwokerto (Central Java), Semarang (Central Java), Solo (Central Java), Yogyakarta (Yogyakarta), Malang (East Java), Jember (East Java) and Surabaya (East Java). Populations surveyed in this research were 2,080 households lived in 208 chosen *rukun tetangga (RT)* and spread in 104 *rukun warga (RW)*, 52 villages (*desa*), 26 districts (*kecamatan*), 13 areas (cities and *kabupaten*) and 6 provinces. Sample unit was a household which consists of husband, wife and children and others.

Primary data were obtained through interview by using questionnaires to respondents (all household members). Soybean products consumption pattern was collected using food frequency method and intake of soybean products was calculated for whole household. Recall method 2 x 24 hours was used for school-aged children (soybean and other non-soybean foods) and the results were used in predicting their nutritional status.

From this study it could be concluded that:

1. *Tempe*, tofu and soy sauce were soybean products most consumed by the peoples in Java island.
2. *Tempe* and tofu were more consumed in urban (122.4 g and 145.4 g per capita per day, respectively) than in rural areas (89.3 g and 99.4 per capita per day, respectively). However, soy sauce was more consumed in rural (16.7 g per capita per day) than in urban areas (14.0 g per capita per day).
3. Common methods of cooking of *tempe* and tofu in household were *tumis* (frying in little amount of oil), deep frying, boiling, steaming and *bacem* (boiling followed by frying).
4. There was a significant correlation between soybean products consumption pattern and nutritional status of children (pre-school and elementary school children). This indicated that *tempe* and tofu still had a significant role as the source of protein for the children.

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PAPER

Effectiveness of Micronutrient Powder (MNP) for In-Home Use and/or Nutrition Education (NE) on the Nutritional Status of Mildly Wasted Children in Nias Island, Indonesia

- IN 195

Objectives

To determine the effectiveness of Micronutrient Powder (MNP) for in-home use and/or nutrition education (intensive or non-intensive) on the nutritional status of mildly wasted children in Nias Island, Indonesia.

Methods

Mildly wasted children (≥ -1.5 to < -1 WHZ) aged 6 to 59 months were either directly recruited in the Church World Service (CWS) project area or referred from the Ready-to-Use Food (RUF) study for mild-to-moderately wasted children (< -1.5 to ≥ -3 WHZ).

Specific culturally adapted interactive teaching materials were developed for:

- intensive (I)-NE sessions on a weekly basis (INE) and compared to
- non intensive (N)-NE on a monthly basis (NNE).

The respective interventions in the CWS program villages included the distribution of

- MNP + INE (n=51),
- MNP + NNE (n=50);
- INE (n=64), and
- NNE (n=50) without MNP. Villages assigned for INE were clearly distanced from NNE. Discharge criteria: WHZ ≥ -1.0 .

Results

Weight gain per kg body weight (BW) per day of children who reached discharge criteria (WHZ ≥ -1.0) within the study period was highest among children receiving

- MNP + INE (2.6g/kgBW), followed by
- INE without MNP (1.5g/kgBW),
- MNP + NNE (0.6g/kgBW), and
- NNE without MNP (0.5g/kgBW).

In addition, the proportion of children who reached discharge criteria was significantly higher ($p < 0.001$) among MNP + INE and INE in comparison to MNP + NNE and NNE interventions groups with an average duration of stay of 29.9, 40.0, 80.6, and 86.2 days respectively. Results of children who did not reach discharge criteria (WHZ ≥ -1.0) within the study period are not included in this abstract.



Conclusion

Mildly wasted children receiving MNP for in-home use and/or participating in intensive NE programs on a weekly basis had significant advantage in gaining sufficient weight to reach discharge criteria within 4 to 6 weeks.

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PAPER

Influences on Adolescent Girls' Food Choices in South Sulawesi, Indonesia

- IN197

Background

Both personal and environmental factors play a role in the determination of food habits. Acquired health knowledge, beliefs, and personal preference have long been recognised as major determinants of food choice in human. Additionally, elements of the social and physical environment interplay with personal aspects for deciding what to eat. Understanding these dimensions, and their interplay, is crucial in developing strategies to promote eating behaviour change that is relevant to, and targets priority nutrition and health problems in a target population. Concerning the limited research literature on adolescents' eating behaviour in Indonesia, and the negligible attention placed on nutrition issues in this population, this research was conducted to provide guidelines for improving eating behaviour that could reduce the risks of nutritional problems among adolescent girls.

Objective

To explore adolescent girls' food choice motivations and to develop a better understanding of the personal and environmental factors driving their choices.

Method

A qualitative methodological approach, utilising in-depth interview technique, was employed as part of a larger mixed method study. A purposive sample of 15 female students aged 12-14 years was recruited from secondary schools in urban and rural area of the South Sulawesi province. An interview guide was used to obtain information from girls on their food preferences and influences on their food choices. Thematic analysis was performed to capture broader concepts that emerged from the data.

Results

Analysis of the data indicated the girls expressed preference for consuming a narrow range of choices within food categories, particularly for complementary foods in Indonesian meal format. Personal preferences were a dominant influence on shaping food choice in this population but were susceptible to change via interplay with other important factors such as health beliefs, body image concern, cultural tradition, availability, family habits, and friends' habits.

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Neys-van Hoogstraten Foundation

PAPER

Maternal Employment and Child's Growth and Development in Changing Socio-Economic Environment & Culture

- IN 205

Introduction

The increasing rate of women employment all over the world in the last few decades has brought about some concern on children's well being. The low quality of care which young children receive in the absence of mothers warns of potential problems because child care is an important factor for child's nutritional status and development. Little help can be expected from extended family members in urban area and institutionalized child care centres are rarely available in Indonesia. Thus, mothers are forced to seek domestic-paid caregivers to look after the children while both parents are working. This research proposes to investigate the effects of long hours spent with nannies rather than either of the parents upon child health and development.

Methodology

The research was designed as a mixed study comprising of a qualitative and quantitative phase. The qualitative study was designed as a case study with 9 types of case and 26 children, their mothers and caregivers involved in the study. The quantitative study was designed as a case control study and currently is on going. The sample size for the case control study is 139 children for each group.

Result

In-depth interviews and observations during qualitative phase result in emerging themes such as poor image of domestic paid caregivers; reduced maternal engagement in families using trusted caregivers; and heavy workload of non-working mothers.

Conclusions

Although working mothers generally have knowledge of food and nutrition and greater financial authority than non-working mothers, their ability to determine child food and other child care practices was limited in families using trusted caregivers. Further research is recommended to assess the quality of family and domestic caregivers. Health professionals should include topics about child care practices when delivering health messages.

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3. Livelihood and Food Security



POSTER

Improving Micronutrient and Socio-economic Status among People Living with HIV/AIDS (PLWHA) in Kampong Chhnang Province in Cambodia – Contributing to National Policy on Care and Support Program for Affected Households.

- CA 207

Background

Food and nutrition insecurity increase vulnerability to become infected with HIV, through increasing mobility and migration in search of food or income, putting people in more risky situations away from home, for example by becoming a sex worker. In addition, food insecurity often leads to malnutrition, which may increase susceptibility to infection. Without food security, the vicious cycle of poverty, food insecurity, malnutrition and progression of the disease is sustained, adversely affecting the health and wellbeing of people living with HIV/AIDS (PLWHA) as well as the other members of the household, leading to increased malnutrition and risk behavior. Since its inception in 1998 HKI's Homestead Food Production Program (HFPP) has been an effective means to improve nutrition/food security, reduce poverty and empower women. In 2004, the HFP was integrated with home base care and support for HIV/AIDS community. However, no in-depth research was really conducted to find out the correlation between HFP for improving nutrition and socio-economic where this research will be focused on. This research is proposed to find out in-depth on the impact of household food security on food availability, food consumption, stigmatization and nutritional status of people living with HIV/AIDS (PLWHA) in the intervention communities comparing with non-intervention communities.

Aims

The overall objective of this research is to assess the impact on nutritional status and quality of life of households affected by HIV/AIDS improve through increased access, availability and consumption of micronutrient rich foods by homestead food production and nutrition education and counseling in the intervention communalities comparing with non-intervention communities

Methods

Baseline (BL) surveys will be conducted including both quantitative and qualitative assessments. BL will be conducted in September-October 2010. 50% of sample households will be randomly selected from BL for both groups. 24-VASQ and achromatic methods will be used to measure height, weight and VA intake from various food groups.



Results

At the NHF workshop the design of the program for improving Micronutrient and Socio-economic Status among People Living with PLWHA as well as the results of the baseline survey [to be conducted in September-October] will be presented.

Conclusion

At the NHF workshops, the conclusions will be presented based on the findings from the baseline survey which will be conducted in September-October 2009.

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POSTER

Livelihood Changes in Recent 30 Years in Rural China

– FW/CH-031

Objectives

The research objective is to identify the changes in the farming household, gender roles, and rural livelihoods after the introduction of the Household Responsibility System (HRS) in 1978 in China, to understand the heterogeneous household land use practices in the context of diversified livelihood portfolios, and to provide policy recommendations for agricultural technology extension. The specific objectives are as follows:

- To gain insight into the changes in farming households after the HRS.
- To analyze the relations between the changes in the household, gender roles, livelihood, and land use strategies and their impacts on rural society.
- To indicate how agricultural extension policies can better accommodate increasing farming household heterogeneity, particularly regarding household land use.

Results

The research was conducted in Kaizuo township, Guizhou province, China. The main findings are as follows: rural households had food security problems before 1978 in the collective period. They had no land to cultivate and worked on the collective land. They got food based on their contribution to the collective production. The households had many similarities in terms of physical resources, financial resources, social resources and environmental resources. Their living conditions were poor. There were fewer products to sell and buy in the market and there was only one coop shop in Kaizuo township to sell daily necessities. Coupons were required if you wanted to buy goods in the coop but the coupons were allocated to each person according to ratio. About half households had to borrow food from the collective and returned next year. The main income resources were from agricultural production. The agricultural technology extension was really top-down and the villagers followed the technologies. Gender issues existed in the collective period.

The household size is becoming smaller and the younger people are getting higher education after HRS. Younger couples went out to earn cash for children and most of their children were left for their parents to take care of. Income sources are more becoming more diversified. Migration is very common for the younger people and circulation is common for the middle-aged persons. Only aged persons depend on land only. Land was transferred to others to cultivate because migration causes labour shortage. Women and men are more equal in terms of ideologies. It is common that who conducts the job, who makes decisions and others suggestions are for reference only. Women prefer to cultivate more diversified crops. Men are more interested in cultivating staple food or cash crops and they prefer to get money from other resources and not agricultural crops. Home garden is women's domain and men rarely give support and participate. Younger wives take more roles in agricultural production compared with their husband and had to do many activities in the field or get help from parents-in-law. Daughter-in-law is more powerful than mother-in-law compared to the past.



Migration brings serious labour shortage in agricultural production. At the same time, the unity of the rural society is decreasing and free mutual help is decreasing. Women are left at home and make decisions in many fields. More female-headed households are emerging. The rural society is more open and new ideas are brought by migrants. Land abandoned cases are increasing and the trend is obvious. Villagers have better living conditions and have more time to relax. Compared with older couples, younger people have more time to relax. Aged persons still work hard because they have to look after grandchildren left at home and the agricultural production.

Farming households have very diversified resources and requirements for technology information. The older couples are the main producers, which requires more appropriate technologies for them.

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Neys-van Hoogstraten Foundation

PAPER

Food Security of Tea Plantation Women Workers Family in Bandung Regency, West Java Province

- IN 190

The data indicates that occupation determines family food availability. Most of the foods consumed are from the purchase. The low access to the non-purchased foods is caused by the following: (1) The tea picking work absorbs all workers' energy resulting in severe fatigue. Moreover, their low income forces them to find an extra job as an agricultural labor. In fact, woman workers contribute up to 43.2% of family income, (2) Yard is used for play ground, drying and storing fire woods instead of planting vegetables, (3) Technical problems including the availability of vegetable and fruit seeds, and (4) little knowledge of nutrition and food value as eating is meant to satisfy hunger and provide energy for work.

Both quality and quantity of foods consumed by these woman workers are significantly low. This, however, differs from children who generally have better food quality as they obtain additional protein from extra food provided by TPA PTPN. Still, 40% of them belong to those whose consumption level is below 70% RDA.

The major protein intake sources are tempe, tofu, and salted fish causing the low consumption of mineral such as iron which is absolutely needed for their productivity. This is worsened by their habit of consuming lots of tea as the tannin in tea inhibits haemoglobin formation. The result is not only low productivity but also poor quality of child rearing and family resource management.

Finally, the recommendations to improve food security of tea plantation woman worker families are: (1) improving income security through better wage system and working productivity, and (2) improving food access from both house yard and bare land by giving them motivation and awareness on food values as well as solving technical problems by providing vegetable and fruit seeds to plant.

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Neys-van Hoogstraten Foundation

POSTER

Food Poverty Line in Relation to Food Expenditure Equivalency in Sumba Island, East Nusatenggara Province

- IN191

Introduction

Sumba Island has the highest poor population compare to other districts in East Nusa Tenggara province where more than 40% of the total population lived under the poverty line. Poverty line was established through one of three measures: direct calorie intake, food energy intake, and the cost-of-basic-needs method. In this study, we focused exclusively on measuring food poverty, given that food shortage would seem to be an excellent proxy indicator reflecting chronic poverty. Food expenditure equivalency then was calculated based on all food that was eaten.

Objectives

To determine food-poverty status using mother's food expenditure equivalency and to assess actual food intake of mothers and children in West and East Sumba districts.

Methods

Mothers' actual food intake determined by a modified 24-hour recall performed to calculate food expenditure equivalency. The price of the food consumed by mothers was determined by asking the mothers directly during 24-hour recall interview and observing food prices in markets. The energy intake results were classified according to the national RDA standard of energy requirements, with the cut off point of >70% RDA as non-food poor, $\geq 50\%$ to <70% as moderately food-poor and <50% as severely food-poor. Household dietary diversity score was used to measure household food access.

Results

The mean energy intake of mothers in East Sumba and West Sumba were 1089.4 Kcal and 1028.4 Kcal with adequate percentage of 48.5% and 46.7% from National RDA. The dietary diversity score was higher in East Sumba than West Sumba (median of 5 vs 4) however the daily food variation mostly consumed were rice, corn, vegetable, tea, sugar and condiments. The mean protein and other micronutrients (vitamin A, Zinc and Iron) intake were also low in both districts. Mean food expenditure equivalency was higher in East Sumba compared to West Sumba (IDR 3,547.8 vs IDR 2,835.3 respectively; 1US\$ = IDR 9,800). The intake of macro- and micronutrient among children in studied area were lower than National RDA with the mean energy intake of 529.5 Kcal and 472.8 Kcal. Food expenditure equivalency was higher in East Sumba than West Sumba (IDR 2166.0 vs IDR 1523.5 consecutively). From table 1 explains that the majority of the mothers in both districts were in the food poor groups either in the moderately or severely poor groups. The mean food expenditure equivalency was significantly lower between severely poor group to moderately poor group and non poor group as shown in table 2.



Table 1. Food poverty line based on energy intake of mothers

| Status level | East Sumba (N = 229) | | West Sumba (N = 255) | |
|-------------------------------------|----------------------|-------|----------------------|-------|
| | % | (n) | % | (n) |
| Non poor (≥ 1540 Kcal) | 5.7 | (13) | 5.1 | (13) |
| Moderately poor (1100 - <1540 Kcal) | 35.8 | (82) | 34.1 | (87) |
| Severely poor (<1100 Kcal) | 58.5 | (134) | 60.8 | (155) |

Table 2. Food poverty status based on mother's food expenditure equivalency¹

| Status level | East Sumba | N | West Sumba | N | Total |
|-------------------|-----------------------|-----|-----------------------|-----|---------------|
| Non-poor * | 4228.4 ± 897.6 | 13 | 4038.8 ± 1809.5 | 13 | 4133.6±1402.7 |
| Moderately poor** | 4040.8 ± 1220.9 | 82 | 3367.4 ± 2328.3 | 87 | 3694.1±1899.4 |
| Severely poor | 3226.3 ± 1049.1 | 134 | 2435.7 ± 1072.3 | 155 | 2802.2±1131.0 |

¹ In IDR (Indonesian Rupiah)

* Significant compared to severely poor group in both districts; $p < 0.05$

** Significant compared to severely poor group in both districts; $p < 0.05$

Conclusions and recommendation

The data revealed the serious condition in that particular area. Therefore food and nutrition intervention programs among that majority of low-income households using specific local resources are strongly recommended.

Acknowledgement

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Neys-van Hoogstraten Foundation

PAPER

The Gold Standard and Indicators of Poverty Line Among Farmer Households Case Study in Subang , West Java, Indonesia - IN 196

Research on farmer households poverty line based on food, nutrition, agriculture, and socio-economics indicators was conducted in Subang, West Java, Indonesia. Two regions representing horticulture and rice fields were selected as the research sites. This research was of a retrospective and cross sectional design. Sampling of 522 households was done through a stratified random sampling technique with a proportional allocation.

The objectives of this study are: 1) to develop a standard and indicators of farmer household poverty line; 2) to compare indicators of poverty found in this study with BKKBN indicators; and 3) to compare several existing poverty lines (BPS, Sajogyo, and World Bank) with a new standard of poverty *line* to be developed in this research.

The gold standard of poverty line accounting for Rp 457 558 per capita per month (US \$ 1.6/capita/month). The number of non farm labour households is 2,5 times higher than that of farm labourers households. In the poor group, there are more farm labourers households than non poor households. There are more farm labourers in the rice region than in the horticultural region. Non poor households have larger size of irrigated land, rain-fed land, and home yard than the poor households.

The condition of farmers' houses in the rice region is relatively better than that of the horticulture region. Septic tanks are found in greater number in the horticultural area than in the rice region. Farming as the livelihood gives relatively higher contribution of income among the non poor households (66.1%) and rice farmer households (54.7%). The adequacy level of energy, protein, vitamin A, vitamin B, and phosphorus is on average over 70%. The adequacy level of iron and calcium is still below 70%, particularly among the poor households and rice farmer households. Children's nutritional status is in general of good category (based on W/A and H/A).

The discriminant function has an accuracy of 84% in identifying the poverty status of households in both regions (rice and horticulture). The discriminant function of the combined indicators which is based on the gold standard of minimum normal life is better than the poverty line (criteria) of BKKBN in both accuracy and simplicity in the number of indicators or variables used. The poverty lines of Sajogyo, BKKBN, BPS, World Bank (\$1) and World Bank (\$2) are significantly different from the gold standard. The five poverty lines have a significant measuring error varying from 9% to 35 %.



Following the deep study on the measurement of a minimum normal living cost, the researchers recommend the application of gold standard of poverty in determining the poverty status of households. The recommendation is based on the consideration that the poverty lines of Sajogyo, BKKBN, BPS and World Bank of US \$1 are below the gold standard.

Key words: *Poverty indicators, farmer, households, gold standard, livelihood*

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POSTER

Study on Socio-economics and Environmental Factors Contributing to Health and Nutritional Status of Street Children - IN 199

Socio-economics and environmental factors contributing to health and nutritional status of street children in Bandung, West Java, Indonesia, were studied from participant observational data, interview, physical examination and blood analysis from samples of 335 street children aged 6-18 years and 97 parents. Nutrition intake was estimated using food recall and food frequency. Nutritional status was measured by anthropometry method and haemoglobin blood level analysis.

The study revealed that the economic factor was the main reason to become street children. The average income of street children was IDR. 16,047. They worked as singers, cleaners, and umbrella renters. Their period living on the street was around 6 hours/day and 6 days/week.

Forty nine point eight percent of street children studied in elementary schools and 26.5% at learning house. The rest did not go to school, but most of them still hope to (79.4%). Generally, the sanitation and personal hygiene was poor.

The street children parents worked as beggars, street singers or garbage pickers. Their mean average income was IDR 197,343/month. Generally, they wanted their children to have better education, living and behaviour. But they also counted on their children to support them financially. Only 37,9% parents listen to their children's complains, which may explain why the children were closer to their friends.

The average energy adequacy level of street children was 83.0%. Fifty percent of street children did not meet the expected nutritional adequacy, although almost all (94.4%) had normal nutritional status. As much as 29.3% were anaemia. The most common diseases found were acute respiratory infection (47%), diarrhoea (22.7%) and skin diseases (18.4%).

Our analysis shows that parent's attention to their children was not optimal. The role of government was still limited and that NGOs played an important role to protection and solving the street children problems.

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Neys-van Hoogstraten Foundation

POSTER

Household Food Security, Family Resource Allocation and its Impact to Child Development in Banjarnegara, Central Java Province, Indonesia

- IN200

This study aimed to estimate prevalence of household food and nutrition security; and to analyze household food security and households resource allocation factors influence to child development (nutritional status, socio emotional and cognitive development). The study was conducted in Banjarnegara District which purposively chosen as one of food insecure area in Indonesia since early 20th centuries. Two sub-districts with the highest risk of food insecurity were chosen as study area, namely Pejawaran (mountainous and high land area) and Punggelan sub-district (low land area). Three villages at each sub-district were chosen, and 50 families with children aged 2-5 years old were randomly selected at each village, for a total samples of 300 families.

Number of household with food insecure (adequacy level less than 70 percent) was still high (approximately 76 percent), while the prevalence of severely insecure was 38.7 percent. Factors significantly influence to household food security was food expenditure and total expenditure. Family with low food expenditure will be food insecured with a probability of 1,665 times, while total expenditure will affect with a probability of 1,706 times.

Prevalence of child nutritional status was classified higher, particularly using height per age indicator which revealed as chronic malnutrition for long period. Prevalence of stunting among 2-5 years old children was 54.4% and prevalence of severe stunting was 18.7%. Based on WHO criteria the area with prevalence of stunting more than 40 percent is considered as facing public health problems. Factors influenced to stunting were level of household food insecurity, food expenditure, and child health practice. Probability of being stunted was 1,543 times when families were insecured. Meanwhile acute malnutrition (indicated by weight per age) was affected dominantly by level of household food security and amount of food expenditure. Probability of child malnutrition to be wasting (indicated by weight per hieght) was 2,311 times when families was food insecured.

Child cognitive and social emotional development was related with socio economy status in term of paternal education and total expenditure. It was also associated with an increasing of maternal characteristics such as her nutrition knowledge, access, and practice, including her psychosocial care and stimulation. With regard to child characteristics the higher z-score of nutritional status the higher it is likely the cognitive and social emotional development is. When influence analysis was used, statistical result showed that dominant factors influencing child level of cognitive development was child participation to preschool education. However factors at home such as family social economic status, maternal knowledge and psychosocial care also give possitive effect to child cognitive development. Child social emotional was mainly distributed to a fair and good social emotional development.



Factors influenced to child social emotional was mostly determined by age of child, psycho stimulation and child nutritional status (height per age as indicator of chronic malnutrition).

Posyandu revitalization which include child's growth monitoring and maternal nutrition education, together with development of early childhood education center, and income generating activities is believed to be able to improve the situation.

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POSTER

Analysis of Social Economic Variables as Determinants of Food security and Children Nutritional Status in The Women Migrant Workers (WMW) Household

- IN 203

Poverty, dissatisfaction over the husband's income and lack of job opportunities have encouraged a wife to migrate and work as a Women Migrant Workers (WMW). Remittance being sent is expected to be able to improve the economic and food security for the family of WMW.

The objective of the study was to analyze determinants of food security and children nutritional status among WMW Household. The study design was a cross-sectional study. Research conducted in Sukabumi Districts, West Java Province, Indonesia, in December 2008-November 2009. A purposive sampling was applied to take 500 women migrant workers (WMW) households. The data collected include socio economic and demographic data, remittance, family strength, perception on food security, food intake and children nutritional status. An Individual energy adequacy level was calculated by comparing actual intake to RDA (*Recommended Dietary Allowances*). Household's food security was determined based on qualitative measures. The t-test and Mann-Whitney test were applied to analyze mean difference of economic variables, family strength and food security before and after the wives became WMW. The correlation analysis is used to see the relation between food security and children nutritional status on social economic variables. Logistic regression was applied to analyze determinants of food security and children nutritional status. The results showed that there are mean difference of household income, food strength and food security before and after the wives became WMW. There was a significant correlation between food security and the mothers' nutrition knowledge ($r = 0.117$), and the amount of remittance ($r = 0.163$), and the household income per capita ($r = 0.158$). The nutritional status of children has a positive significant correlation to households food security ($r = 0.152$), and to the energy consumption level ($r = 0.207$). The main determinants of food security are remittance contribution over income (OR = 1.690), and income per capita above poverty level (OR = 2.418). The main determinants of nutritional status of children are food security (OR = 2.928), and energy consumption level > 70% (OR = 1.413).

Key words: *Women migrant workers, Food security, Nutritional status*

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Neys-van Hoogstraten Foundation

PAPER

Food security, food consumption and generational differences: Insights from Jhapa District, Eastern Nepal

- NP187

Nepal has been undergoing a number of changes with implications for means of living, perception to food security, and food consumption pattern. Labour out-migration has become instrumental to such social, economic and cultural changes. This paper presents a changing scenario of the meaning of food security by different generations and changing composition of menu in an agrarian society in rural Nepal.

The paper is based on anthropological and demographic PhD research being carried out in Jhapa district, eastern Nepal. Both qualitative and quantitative approaches have been applied. A survey of 277 households was used for primary data collection.

Preliminary analysis shows that few households are food insecure due to access to land and rice farming. The meaning of food security is changing due to low income from agriculture, increasing access to labour out-migration and to capital, increasing access to information and so on. There is a difference in the meaning given to food security between generations. Older people believe in rice production while younger people believe in access to capital through other sources. In their own words, they always try to get rid of 'dirty' job with 'no money' in agriculture. The paper explores the reasons for different perceptions of food security. If remittances from migrant workers are controlled by fathers they want to add more agricultural land while younger migrants and their wives want to buy residential plots in nearby towns. Some returnees started investing in shops and businesses. Likewise, due to increased access to capital and information people add more vegetables to their daily menu. The frequency of eating meat and tendency of eating junk food has also increased. At the NHF workshop, cases and quantitative analysis will be presented.

Key words: *labour out-migration, food security, food consumption, rural development, Nepal*

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Neys-van Hoogstraten Foundation

PAPER

Developing a simple but effective model of homestead food production based on growing kang kong and yellow-fleshed sweet potato among vulnerable groups.

- NP189

Background

Child and maternal mortality rates in Nepal are among the highest in Asia. Micronutrient malnutrition, one of the key contributors to mortality, is a serious public health problem in Nepal. With large proportions of women and children having dietary intake below their daily requirements, micronutrient deficiencies have resulted in lower cognitive and physical development of children and lower work productivity among women. Since its inception in 1997 HKI's Homestead Food Production Program (HFPP) has been an effective means to improve nutrition, reduce poverty and empower women. Given the current socio-economic environment in Nepal, however, it is important to promote agricultural methods that are even less time, labor and cost intensive. Accordingly, HKI conducted research on developing a simple but effective model of HFPP based on growing kang kong and yellow-fleshed sweet potato among vulnerable groups.

Aims

To develop and compare a simple, easy and low cost/low input Conventional model of HFPP using yellow-fleshed sweet potato and kang kong, to a more intensive Integrated HFPP model requiring more inputs. In particular, the research compared the two models' impact on production and consumption of these two vegetables, as well as on the livelihoods and nutritional status of project beneficiaries.

Methods

Baseline (BL) and Endline (EL) surveys were conducted including both quantitative and qualitative assessments. BL was conducted in March-April 2007 and EL in November 2008. 50% of sample households were randomly selected from BL and EL for both groups. 24-VASQ method was used to measure VA intake from various food groups, including kang kong and sweet potato.

Results

Households (HH) with improved gardens increased from 12% to 85% in the conventional group (CG) and from 6% to 80% in the integrated group (IG) at endline. At baseline, none of the HHs in either group had developed gardens, but this increased to 10% in CG HHs and 15% in IG HHs at EL. Consumption of Dark green leafy vegetables (DGLV) and Yellow orange and red vegetables (YORV) increased from BL to EL among HHs in both groups. 94% of HHs in the CG consumed DGLV, and 37% of HHs consumed YORV at EL, compared to 84% and 14% respectively at BL. Money received from the selling of garden produce in the last 2 months was NRs 510 and NRs 550 in CG and IG respectively. It was found that large amounts of this income came from selling kangkong and sweet potato. Egg consumption also increased from 30% to 47% in CG and from 28% to 41% in the IG from BL to EL.



The energy intake (caloric) increased from 669 to 852 kcl in CG and from 707 to 798 kcl in IG among children from BL to EL.

Conclusion

This research project was successful in achieving the intended objectives and in developing a simple but effective model of HFP, demonstrating that the production of kang kong and sweet potato has multiple benefits, including increasing food security and nutrition and improving livelihoods and economic status of beneficiaries. Furthermore, both models can be used and adapted depending on the needs and resources of different communities. This research will help local communities, HKI, and the Government of Nepal to expand and use both models in ways that will bring the greatest benefits to those households in need.

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PAPER

Coix lacryma- jobi Linn.: A grass weed for livelihood and food security enhancement of rural communities in Benguet, Phillipines

- PH 209

There is money-making venture that is sure to uplift the life of the rural communities in Benguet Province out of the novelty products derivable from the plant which the local folks would name 'adlay, ag-gey, tigbi, takay-an, takjan", etc'. The plant, considered a weed by some farmers when found growing in rice paddies, is scientifically known as *Coix lacryma jobi*-Linn. Belonging to the same family where rice, corn, barley, sorghum belong (i.e. Family Poaceae/Gramineae), *Coix* is known to have wide array of uses. Through interviews with the local folks who are knowledgeable on job's tears (the plant's English name), this study documented two types- the cultivated and wild types. The cultivated types are prepared into food (e.g. cooked like oatmeal, as tea, or as 'tapey" or rice wine), or used as medicine to cure some ailments like wounds, blisters, urinary tract infections, etc. The wild types are made into ornaments (e.g. earrings, bracelets, necklace, rosaries, bags, belts, curtains). It is remarkable that *Coix* will provide lots of economic opportunities for people, both young and old alike. Rediscovering such diverse uses would be inherent for people to protect, conserve and propagate *Coix* because they realize that their livelihood and survival depend on the plant. To pursue this importance of *Coix*, many on-going activities are in the pipeline, such as: collection of *Coix* germplasm, correlating soil (edaphic) factors to the growth of *Coix*, and growing *Coix* in mining-abandoned areas. Seeds collected from some places in Benguet are being distributed for planting in order to provide ready materials for use by rural folks. Results from these activities are deemed necessary to promote awareness on this very versatile species of grass. Truly, local folks are convinced about the wide usefulness of *Coix* and many of them are interested to join livelihood workshop and exhibit the novelty products they make out of *Coix* grains.

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Neys-van Hoogstraten Foundation

POSTER

VAC model for Household's Income Improvement and Nutrition Security – Recommendation to Develop VAC Model in the Context of Economic Integration

- VT 204

Based on the evaluation of VAC model's contribution in household's income improvement and food security as well as nutrition security, key economic-technological solutions are recommended to develop VAC model adapted with situations in the context of economic integration. Specifically, the research aims to:

- Evaluate the contribution of VAC model in generating household's income and ensuring nutrition security;
- Investigate the level of economic and technical knowledge applied in VAC models in study sites;
- Estimate home food consumption in households practicing VAC models;
- Develop training materials which are suitable to farmers' level of knowledge and adoptability, also provide training courses and guide farmers to practice in research sites.

The poster consists of:

- Short abstract;
- Introduction;
- Objectives;
- Key Results;
- Main findings (as the project is on going);
- Acknowledgement for the financial support from NHF;
- With 1 figure, 1 table, 2 photographs

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Neys-van Hoogstraten Foundation



4. Nutrition Security



POSTER

Age at Menarche of the Contemporary Bengali Girls of Kolkata City Under Transition: Influence of Household and Auxological Variables

- ID 158

The paper presents distribution and median age at menarche of the contemporary predominantly middle class Bengali girls of Kolkata City based on data from 1020 subjects aged 7-21 years. It further attempts to find out the influence of a set of household and auxological variables for its onset.

Cross-sectional data on age at menarche, 21 Anthropometric and 53 socio-economic and demographic variables were collected from the households of 20 south Calcutta-based schools and college girls during the year 2005-2009. Menarche data were collected from the girl and her mother both by status quo and recall methods. Anthropometric data were collected following IBP Protocol on and around birthdates of the subjects and household socioeconomic data were collected by interviewing parents.

Median ages at menarche of the pooled sample is 12 years 2 months estimated by the method of Turnbull Estimator and is lower in comparison to the earlier study (Sarkar and Roy, 1968) reported on Calcutta girls (12.90 years), indicating positive secular trends through earlier maturation. Girls with higher parental educational level, per capita expenditure are early matures than the girls with lower parental education and per capita expenditure. Further, daughters of the service holder father are early maturer than the daughters of the businessmen. Increasing number of living room per household also appears to be associated with early maturation. Though size of sibship has no effect on its onset, but first born girls are found with low median age than the later born.

With respect to growth variables, during age 10-13 years, average height, weight, sitting height, leg length biacromial and bi-iliac diameters, total arm length of the menarcheal girls is significantly larger than the non menarcheal girls. Cephalofacial and subcutaneous fatness traits show such variation in 12 and 13 years. Menarcheal girls show more truncal fat distribution in later ages. No consistent trend is observed between the menarcheal and non-menarcheal girls with respect to sitting height-leg length ratio.

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Neys-van Hoogstraten Foundation

POSTER

The Intergeneration Cycle of Low Birth Weight: The Nutritional Status and Health-Nutrition Knowledge, Attitude, Behavior of Female Adolescent in the Tanjungsari Cohort Study, West Java, Indonesia

- IN 202

Background

- Low Birth weight (LBW) or Intra Uterine Growth Retardation (IUGR) contribute to global burden of disease
- To elucidate the intergenerational cycle of IUGR and LBW, a study is needed, which allows to estimate the contribution of pre- and postnatal growth to the next generation's reproductive performance (as measured by the variance in birth weight and the prevalence of LBW) and taking account the nutritional (energy) status of the mother before conception.
- The Tanjungsari birth cohort is an appropriate sample for a longitudinal, prospective study on the long-term effect of LBW on reproductive performance such as menarche and fetal growth.
- The Tanjungsari cohort (West-Java) subjects are infants born during the period of 1988-1989 and 1991-1993; Anthropometry data were collected regularly.

General objective

The general objective of this first phase was to assess trends in the nutritional status and health/nutrition knowledge, attitude, and behavior (KAB) of the cohort population (RAS mother, F1 generation and their daughters, F2 generation) as well as the trends in socioeconomic condition and health/nutrition services in the study villages.

Methodology

- Village characteristics.

The most recent information (2003-4) of village was collected from basic statistics of the village, completed by the report from the National or Provincial Bureau of Statistics (BPS) and National Family Planning Board (BKKBN)

- Household survey

There are 2 types of questionnaire; one included personal information of household and the second one included the reproductive history, knowledge, attitude, and practice related to family planning and health as well as the habitual diet and dietary history.



Result and Conclusion

Low birth weight incidence in the F2 generation suspected to be primarily attributable to intra-uterine growth retardation rather than postnatal and current dietary (energy) deficiencies.

Acknowledgment

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POSTER

Efficacy of Multiple Micronutrient Fortified Biscuits on Micronutrient Status and Effectiveness of Deworming in Rural Vietnamese School Children

- VT 188

Background

Concurrent micronutrient deficiencies are prevalent among Vietnamese school children. A school-based program providing food fortified with multiple micronutrients could be a cost-effective and sustainable strategy to improve health and functions of school children. However, the efficacy of such an intervention may be compromised by a high prevalence of parasitic infestation.

Aims

To evaluate the efficacy of school-based intervention using multi-micronutrient fortified biscuits with or without deworming on anemia and micronutrient status in rural Vietnamese schoolchildren.

Methods

In a randomized, 2x2 factorial, double-blind, placebo-controlled trial, 510 schoolchildren, aged 6-8 years, living in rural North-Vietnam received albendazole (400 mg) at baseline and/or multi-micronutrient fortified biscuits and/or placebo. Micronutrients in the biscuits included iron (6mg), zinc (5.6mg), iodine (35µg), vitamin A (300µg). Biscuits were given five days a week for four months.

Results

Parasite infestation was highly prevalent, with >80% of the children being infected with either *Trichuris* or *Ascaris*. The majority of the children had a low intensity of infection. Multi-micronutrient fortification significantly improved the concentrations of hemoglobin (+1.87 g/L, 95% CI: 0.78, 2.96), plasma ferritin (+7.5 µg/L, 95% CI: 2.8, 12.6), body iron (+ 0.56 mg/kg body weight, 95% CI: 0.29, 0.84), plasma zinc (+0.61 µmol/L, 95% CI: 0.26, 0.95), plasma retinol (+0.041 µmol/L, 95% CI: 0.001, 0.08), and urinary iodine (+22.49 µmol/L, 95% CI: 7.68, 37.31). Fortification reduced the risk of anemia, and deficiencies of zinc and iodine by >40%. Parasitic infestation had no significant effect on fortification efficacy, but fortification significantly enhanced deworming efficacy, with the lowest re-infection rates in children receiving both micronutrients and albendazole.



Conclusion

Multi-micronutrient fortification of biscuits is an effective strategy to improve micronutrient status of rural Vietnamese schoolchildren, and a high prevalence of parasite infestation (of low intensity) does not significantly affect effectiveness. Moreover, deworming effectiveness was improved by the consumption of multi-micronutrient fortified biscuits, indicating that these combined health interventions are beneficial.

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5. Linking Research to Programmes



Neys-van Hoogstraten Foundation

PAPER

A Study of Posyandu Nutrition Program: Participation, Nutritional Knowledge of Mothers and Children Nutritional Status

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The objective of this research is to analyze the degree of children participation in the posyandu nutrition program, nutritional knowledge of mothers, and children nutritional status. The research used a cross-sectional design with 300 samples of poor and non-poor households including their children.

The participation of children (under five years old) in visiting posyandus is relatively good, namely, 92.4% (for the high participation group). However, for the low participation group, the number of participating children is relatively low (28.3%). The absences from posyandus are due to their mothers being busy or children being still asleep.

Weighing and immunization are the major services at posyandus given to children under five years old. Generally, the children of the high participation group already have KMS (growth chart card). More than 90% of children, both of those who often and seldom visit posyandus, have received vitamin A capsules.

The nutritional knowledge of mothers having children under five years old is generally of medium category. The prevalence of underweight, stunted, and wasted among children are respectively 30.0 %, 43.7 %, and 12.3 %.

Mothers having children under five years old think that the supplemental food program and nutrition extension at posyandus should be improved. The number and skills of the cadres are already considered quite good, the presence of midwives at posyandus is inadequate. The immunization program for children is viewed as very good by mothers having children under five years old.

The activities at posyandus have a positive impact on the nutritional status of children under five years olds, measured in terms of *Weight for Age (W/A)* and *Weight for Height (W/H)*. The more frequent the visit to posyandus, the better the nutritional status would be.

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Neys-van Hoogstraten Foundation

PAPER

Validating Perceptions on Food, Nutrition, Health, Program Access and Participation from Selected Urban Poor and Indigenous, Upland Farming Households

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In a study that characterized the availability, accessibility and affordability of nutrition programs among 70 households in urban poor and poor indigenous upland, farming households in Taguig City and Banaue, Ifugao in the Philippines *their* "voices" resounded of sadness and cynicism amidst the squalor of their condition. The poor households suffer differently, each displaying the uniqueness of their condition and response to pressing household concerns. Dole-out mentality still pervades over a majority of them on top of lack of program information that could contribute to the lack of interest to participate. Accessibility to these programs is in the area of physical access and availability of resources including medicines.

Working on the premise that poor households as primary stakeholders to the formulation of nutrition-related and pro-poor programs should be factored in the equation of solution analysis and policy formulation, two feedback conferences *cum* workshop were held in the two study sites in order to get a more holistic view of nutrition program management, raise recommendations based on the findings of the study and brainstorm/plan on these findings and recommendations. Perceptions and constructs extracted from the study that dwelt on coping/food adjustments, a *healthy* child, health and health-seeking behavior, program access and participation were validated among local program implementers in the same areas, including some of the households and local officials. At the household level, issues, constraints and negative impressions were drawn. From here, action points were identified.

Acceptability of the programs and active participation may be realized when increased confidence of participants to program objectives and trust in the implementers is forged. Perceptions such as "*their situation being the same even with program participation*" and "*no matter how hard they try to make the ends meet, they still cannot get what they desire*" remain perennial challenges.

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