

Book of Abstracts



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Theme 1:

Food production and livelihoods of rural households

John Rahail and Michael Rumbiak

Determinants of the community's socio-economy and culture on main food consumption pattern and the status of family nutrition in the rural areas of Irian Jaya (Papua)

Irian Jaya Province (Papua) is based on two distinctive topographies; coastal lowland and islands versus mountainous and valley areas. Such topographies affect the people to have their own characteristics either social, economical or cultural. The society lives very traditional. One of them influence their staple food like; Sago (*Merauke and Yapen Waropen Regency*), tuber (Jayawijaya and Paniai Regency) and Banana (*Sorong and manokwari Regency*).

The big assets of the local people were the natural resources like land, rivers and forests. All sources of staple food were easy to find. It was easy for them to make farms (Village), catch fish, hunt, and collect vegetables.

Staple foods are more difficult to find now because of the distance to its location. The soil was used intensively and it changed dramatically because of more inhabitants. The inhabitants use the soil for intensive agriculture and do not use fertilisers. Inhabitants continue to collect wood and hunt in the forests. For the consumption of daily food, especially staple foods, formally nothing is forbidden. However, especially pregnant women should not give such food to their children. Examples: Pregnant women should not eat fish because after she gives birth, her baby would have the skin like a fish. During other times, the reciprocity balance can be seen and felt when they do traditional ceremonies and ritual traditions. Staple foods, are then used to keep a good relationship with other families by giving it to others family or eating together. Most of the local people have access to the local staple food (such as tuber, cassava, sweet potatoes, sago, and bananas, etc) because the have a garden and/or orchard. Because of this, only some of the citizens have to spend money to buy food. One exception is the small group of non-locals (migrants) who always have to shop on the market. Staple food (sago, tuber, and banana) has different economic values. In the culture of the traditional society, they use simple tools (bamboo or wrapped leaves) and no food is preserved. The livelihood system for the society has a subsystem and can be showed by the consumption pattern food that does not vary over the days. It is simply fried or boiled (on bamboo, brick kiln, and leaves). The normal consumption pattern of a household is eating twice a day. The inhabitants do not have a lot of variation in their food because they all like to get their food in the forest. They only vary their food preparation if they have visitors, ceremonial rituals or traditional ceremonials.

The nutrition status of babies and children does not differ. For the preparation of food, measuring nutritional status made a distinction between heavy and light children (no genetic factors).

Description of the nutrition status:

Nutrition status	Now (Heavy, high /age)				Born (heavy, high, age)			
	S	T	B	R	S	T	B	R
Low	26%	26%	43%	31,7%	10%	10%	30%	6,7%
Middle	21%	21%	11%	17,7%	15%	15%	12%	4,7%
High	53%	53%	46%	50,7%	75%	17%	58%	64,3%

- S (Sago) - T (Tuber) - B (Banana) - Range

The current children's nutritional status in values is: 50,7% of the children who consume sago and 53% of the children who consume tuber have a good nutrition. The range of the nutritional status is 69,3%.

An effort to assess the social medical problems (nutrition) in the Irian Jaya (Papua) Province must be continued in the location of study.

Yusuf Arihadi

Impact of irrigation development on women and their households

The development of small-scale irrigation, like in the case of the Haurgeulis project, provides interesting points in terms of development issues especially its impact on women and their households. The study chose a case study method to get detailed and descriptive figures of the impacts of a development intervention. Some research techniques such as household cases, surveys, in-depth interviews, participant observation and secondary data review were employed. The data were grouped into community profiles, impact of irrigation development and household cases. All the data was gathering between January to March and August in 1999, a period of 4 years after the irrigation project was phased out to the community (1995).

A description of farmers' level of landholding at the study sites shows that most of the farmers hold a small parcel of land. More than 45% of the farmers hold less than 0.5 hectares, while the landless were 13% beneficiary and 24% non beneficiary farmers. A process of land fragmentation has been taking place for long time at the study sites. While the land tenure system existing in the study site were owner, tenant and mortgagee with varieties of arrangement among individual farmers.

At the outset, a general change of tenancy relation in the agrarian society at the study site was observed. The most dominant change in labour and owner relation was directed from an exclusive towards a more open relationship and from a social to a rational consideration. On one hand, the traditional *bawon* and *ceblok* (sharing system of paddy yield between owner and certain, merit based recruitment labourers) still exists in some cases, while on the other hand, paid labour with contractual, output based payment and *grebegan* system (employing whoever labourer including from distant village/sub district to do some agricultural work with in kind payment) also prevailed.

The community profile shows that men and women have no different access to land at the household and the community level, but recognition of formal entitlement were restrained to women. A lot of land, owned by wives from inheritance, was all under their husbands' names. In terms of sexual division of household labour, a general and traditional pattern was still found but varieties of women dominant in some work, traditionally done by men, was also found. This can be seen in the production of rice such as ploughing and fertilising, management of *lumbung* (paddy store) and selling the paddy yield.

In decision making process, women and men generally have an equal position in matters categorised as domestic or household arenas, in which women are still dominant in traditional roles such as preparing food and management of household enterprises. In the public arena, women remain subordinated. At social ceremonies, leadership of political and public organisation remains the domain of men. None of the chairs or leaders is woman.

While the project intervention has been biased to men as the head of household, the study shows that in terms of membership of P3A (Water Users' Association), project inputs and processes e.g. training, production inputs provision and meetings were directed to men farmers. On the other hand, the study also indicated that women farmers also struggled to have access to project inputs and processes. The willingness to access the project inputs were expressed in sense of being the members, participating the meetings and project activities though they were not formally invited.

The designated impacts of the project on the improved annual paddy production were significant. The small-scale pump irrigation has not only intensified the planting of paddy, but also increased both the annual as well as its production per hectare. The experience of the production increase occurred at both beneficiary and non beneficiary, as the technology of pump irrigation were also adopted by non participant farmers by purchasing small portable water pump and better access to agriculture inputs.

In terms of rice sufficiency, different agrarian classes showed different levels of sufficiency. Both beneficiary and non-beneficiary farmer owners showed surplus of paddy production by which they can sell their yield. While tenant non-beneficiary, labourers both beneficiary and non beneficiary were experiencing deficit of paddy stock. In terms of income, all farmer categories experienced an increased income level after the project. In this case, farmer owners benefited the most from the project. Yet, their level of welfare decreased because of price hikes of other goods or because of the ongoing decreasing exchange value of paddy as compared to the other goods.

In terms of consumption, most of farmer households consume available and local produced foods such as rice and/or cassava as their carbohydrate source. Other food available and accessible to them are *tahu* (tofu) or *tempe* (fermented soybean cake) as plant-source protein food or dried fish. They rarely consume meat except during fiests or *hari raya*. However, vegetables and fruits are consumed regularly. Milk is, just like meat, rarely consumed. In terms of their eating habits, more than a half of the farmers eat together at one table, a smaller group partly eats together and a minority never eats together. In case they cannot eat together, most farmers perceive that children should be prioritised to eat first.

Most mother breastfeed their babies until they reach the age of 2 years. Additional food was given to babies between 1 – 6 months old. Mothers usually serve grind banana to their babies. Besides weaning their babies, the most common food those mothers provide to them carbohydrates. Aside from rice, mothers also give tempe, *oncom* (some kind of tempe but made from waste of tofu material) or vegetables. Most mothers perceive that if their child's stomach is full with food from stores such as crackers chiki etc. its is enough for their health. They do not know what constitutes a healthy diet, and they even perceive that instant noodles are more nutritious than rice with vegetables.

The study also shows that access of women to employment was increased by the project through the increased demand of labour in rice production. However, women still receive a lower wage, even if they do the same kind of work in an equal time period as compared to men. On the other hand, daily time allocation of women was longer as compared to men with additional workload brought by the project. Also the project benefited less to the poor (labourer and women).

Based on the above-mentioned findings, the study suggests that similar future projects may deliberately benefit to the poor. Not only granting land to farm labourers and women farmers -at the third planting circles – but also integration of knowledge improvement and practices on nutrition and family health should be an integrated part of the project.

Nguyen Thi Xuyen and Nguyen Van Dinh

Improvement of income, food security and decision-making capacity of farm households in the Red River Delta of Northern Vietnam through potato ICM application

Thanks to the renovation policy “doi moi”, food production in Vietnam is growing and turns Vietnam to a second world largest rice exporter. However, in the Red River Delta (RRD) of North Vietnam, where favourable conditions for economic development exist, there are still 8.38% hungry and poor households and many factors affect food security, such as, reduced farmland, relatively high population growth rate and stagnant yield of many food crops. Thus, increasing the cropping intensity using potato crop presents a great potential to contribute to ensuring food security and improving farmers’ income.

The project “Improvement of income, food security and decision-making capacity of farm households in the Red River Delta of Northern Vietnam through potato ICM application” funded by Neys Van Hoogstraten Foundation, the Netherlands has been implemented since 1998.

A total of 270 farmers have directly participated in the project, of which 57.92% were women belonging to four communes of four provinces having largest area grown with potato in RRD. As a positive result, in comparison with the previous years ICM application increased average yield by 17.38%, 24.44%, 45.53% and 52.77% for communes Nguyen Xa, Dong Xuan, Ha Hoi and Hao Kiet, respectively. It has been shown that the factors variety, farmyard manure and nitrogen exercised greatest effect on yield. Average income per hectare increased significantly compared with the control and contributed considerably to total household’s income. Also the role of women in decision-making on technical adoption, products marketing, asset purchasing and family expense has been greatly improved.

Betty Gayao

Complementary role of sweet potato production in the rural areas to household processing in the urban areas: its effect on household income and nutrition

Sustainable household processing enterprises require a strong link of raw materials supply and market outlets. An on-going project which started in 1998 had linked groups of sweet potato growers to processing associations that supply snack food to school canteens. This paper compares the findings of studies conducted to assess constraints and the contribution of sweet potato production and processing to household income and nutrition between rice farmers in Aringay (a rural area) to household food processors in Baguio City, Philippines. It will attempt to identify the areas that can be improved to strengthen these linkages and sustain the sweet potato-based food processing enterprise.

Kelly Hallman and Bilqis Amin Hoque

Impacts of vegetable technology adoption on time allocation within rural Bangladeshi households

In 1996/1997 the International Food Policy Research Institute (IFPRI) conducted research in Bangladesh under the theme "Agricultural Strategies for Reducing Micronutrient Malnutrition." Household surveys, covering four rounds (one complete agricultural cycle), were undertaken in rural areas where new fishpond and vegetable technologies were being introduced through micro-credit and training programs targeted to women. Linkages between adoption of new technologies and a variety of nutrition and gender-related outcomes were examined.

As a follow-up, an additional year of surveys in the vegetable site was undertaken in 1999/2000 by IFPRI, with funding from Neys-van Hoogstraten Foundation and USAID. This will allow a more accurate assessment of gender-differentiated impacts of the technology controlling for inter-year variations, and a better understanding of longer-term dynamics of household processes triggered by adoption of the technology.

An issue of particular interest is how time allocation patterns change over time with adoption. More specifically, with longer-term involvement in vegetable production, do the related activities affect women's time in food preparation, childcare, and other productive and reproductive activities? When vegetables are profitable, do men shift their time into vegetables? Male and female activity patterns have the potential to influence important welfare measures such as household spending on food; investments in the nutrition, health, and education of children; among others.

The analysis will examine how adoption status has changed over time and describe characteristics of "stayers" (using the technology in both periods), "recent adopters" (switched into the technology), and "former adopters" (stopped using the technology). Changes in male and female activities across the two time periods will be analysed along several dimensions: dynamic household adoption status; agricultural season; household wealth ranking; household land holdings; occupation of household head; and household size and structure.

The findings will provide policy-relevant information on characteristics of longer-term users and how continued involvement in the vegetable technology transforms male and female activity patterns.

Theme 2:

Household food consumption and social change

Iris N. Keasberry

Social change and food practices of elderly households in rural Special Region Yogyakarta, Indonesia

The research on 'Elderly Care in Rural Special Region Yogyakarta, Indonesia' is lasting from 1995-2000. The main objective is to gain insight into the lives of elderly people with regard to the care and support that is exchanged between elderly persons and the members of their social support network (household-kin-community). I studied the food situation of the elderly as part of their individual characteristics in order to define the effects on the care arrangements and support networks. The social security of which the food security is a part is also studied.

Various data sources and research methods were applied according to the triangulation approach. Both qualitative and quantitative methods were used e.g. case studies (n=8), in-depth interviews, participatory observation, Elderly Household survey (n=397) and desk research of statistical data. A comparison was made for a village in a poor area with high out-migration and limited agricultural possibilities, and a village in a relatively more prosperous area with low out-migration and the major employment in agriculture. It is assumed that the lives of elderly people are changing and it is important to know whether the processes of change influence the food practices of elderly people.

According to the ANSI-checklist most of the elderly were at high nutritional risk. This result was probably overstated because the checklist was not appropriate for the local situation. However, many elderly people ate meals with low nutritional value and little variation in ingredients or taste. Most of the elderly could still shop for daily groceries, cut firewood, fetch and boil water, and cook meals without difficulty if they were common to do it. When they could not perform these IADL-activities a co-residing daughter (-in-law) most often helped them. The majority of the elderly never worried about their food supply and is therefore considered as food secure.

Alfian Zein

The impact of fisheries modernisation on the consumption pattern of artisanal fishermen

The fisheries modernisation on artisanal fishermen gives the positive impact to the income of fishermen household. This condition has changed the consumption pattern. The objective of this research is to analyse the fisheries modernisation on the consumption pattern in artisanal fishermen in Padang Municipality, Indonesia.

The research was carried amongst 99 artisanal fishermen households in Padang Municipality of West-Sumatra from 1996-1997. The socio-economic data were analysed by means of descriptive and qualitative analysis. The income analysis used is profit function.

The findings of the analysis are: (i) the average of the artisanal fishermen income is about US\$ 3,382 per household per year, (ii) a part of artisanal fishermen community spend their income to fulfil their food consumption is about 74 percent. Meanwhile the expenditure for standard of living is lower, (iii) there exist a positive correlation between modernisation and the increasing of consumption ($R=0.80$). where the more increasing of fishing technology given, it will attain the more income for the consumption, (iv) the interesting thing obtained from this research, is the income mostly spent to complete their main needs, rice (66 percent), (v) for the traditional fishermen family, who have not been touched by modernisation particularly receive lower income. It is about US\$ 374 per capita per year, so the tendency to get their mainly needs is not fulfilled.

This research shows that for the traditional fishermen community, the orientation of household expenditure is dominated by spending their money to attain rice as the primary consumption commodity, especially for Indonesian people. But, the more modern the fishermen community is, the less the expenditure percentage used to get rice.

Tran Van Hoa and Jaap Voeten

Household food consumption and modernisation: the street foods sectors in Vietnam

In Vietnam, the street foods sector forms an important part of the urban informal sector and has been recognised as a generator of income and a provider of cheap food for poor urban people, not only in the recession but also in periods of economic growth. The sector offers opportunities for poverty alleviation although its significance has often been ignored due to that fact that little information is available on socio-economic characteristics. To keep pace with rapid urbanisation in Vietnam and for problems of food quality and safety to be overcome, new policies and actions are needed.

Hue University and Vrije Universiteit Amsterdam carried out research to assess the significance of street foods sector in Vietnam and to define follow-up intervention strategies. The research was carried out in Hue, Hanoi and Ho Chi Minh City and comprised a survey of 127 street food vendors and interviews with policy makers, city administrators, health department and NGO representatives.

The first outcomes of the study confirm the role street foods sector as a so-called social 'safety valve' playing an important role in the household budgets and family nutrition. The sector, dominated by women, generates reasonable incomes in the Vietnamese context. The majority of the business is between 5 and 10 years old and in most cases the only income-generating activity of the vendor. It was confirmed that few street vendors put basic hygienic food handling in practice. Therefore, intervention strategies should focus on services to the street food vendors (credit, training, information, food handling) as well as awareness raising among policy makers, city administrators and planners.

This is the first systematic research on the street foods business in Vietnam. It contributes not only to the theoretical aspects but also to the practical issues to formulate sound policy for promotion of street food sector in Vietnam.

Rawa El Amady

Household strategy to response the impact of industry

This field study is related to development sociology, with the sub-field of study being community subsistent faming. Subsistent household strategies have faced a change, which is a consequence of industry. The study analysis unit consists of a household or family and village community, nearby an industrial district.

The studies try to answer the question “how subsistent household strategies fill in household consumption needs under circumstances of losing their farming resource economies”. In order to answer the question, the main theory used is the ‘moral farmers economy theory’ of Scott. To answer the mentioned question, living with the native citizens of Pangkalan Kerenci in two stages of approach was necessary. The first was to approach the community and the second to approach the citizens. From 70 households, which were registered, 30 households were selected as samples based on their work and income. The 30 households were intensively researched with the assistance of research participants.

The result of the research was based on the correlation between the district’s head of families and the environmental conditions. With regard to families with an open character, e.g. families who have moved, received education or were friendly with outsiders had changed to plantation industry sectors, trading and services. In general, household economies directly enter global economy. The families of the district continued in farming and fishing sectors or became daily labourers. The occurrence of access differences is because of corruption of district employees in the distribution of economic opportunities. But the consumption pattern of a household has not changed. Only changes occurred in education. Where the households with a good economy after the arrival of the industry have inclined to worsen or have consisted in daily spending inclinations.

This research has been carried out to finalise the PhD programme of the above-mentioned author at the Universitas Kebangsaan, Malaysia.

Bambang Rudito

Changing food consumption in Mentawai society

Using cultural knowledge, people interpret the environment and generate their behaviour and making something to fulfil their need. Changing in the environment would change the interpretation patterns of the people's cultural knowledge; they will shift and add their behaviour patterns with the new one.

Mentawai society included as a simple society. This initial follow the condition of that people, they are living in extreme poverty, shifting cultivation, includes those operating from permanent settlement with a relatively elaborate material culture. Hunting, fishing, and gathering provided the bulk of daily food, fruit trees and pigs and chickens are domesticated. Sago and taro are the staple food.

Social interaction could not be avoided from the neighbours, such as immigrant from Minangkabau, Batak, Nias, and Jawa, which have been considering as a progress society, educated and wealthy. The impact of those interactions is Mentawaian imitates immigrant life cycle's, especially in daily food. They think that the neighbours become progressing because of they consume rice and vegetables. This opinion causes efforts the way to find rice, such as getting money from rattan and aromatic herb selling.

This paper will explain the traditional daily food of Mentawaian, social interaction pattern between Mentawaian and the other ethnic groups, impacts of the national culture (value from the government).

Theme 3:

Poverty, household food security and nutrition, and vulnerable groups

Felicitas F. Bacos

The nutritional status of street children: Why some are nutritionally well off or worst-off?

The situation of children in especially difficult circumstances, particularly the street children, continues to pose challenge to the city's social and development planners. From observations, these children are quite vulnerable to poor health and malnutrition, yet some are seemingly healthy. In the face of adverse conditions due to poverty, these children may attempt to overcome the problem and constraints through some form of coping mechanisms in order to satisfy their food needs and eventually determine their nutritional status. Thus, the study aimed to determine the factors that may be related to coping behavior to food acquisition of nutritionally well off and nutritionally worst-off street children in six districts of Manila, Philippines.

Street children in this study is operationally defined as those children who may or may not have families and are driven to the streets, primarily, to earn income for daily survival or those without income who seek refuge on the street due to breakdown of traditional family values. The study involves gathering of information that may be related to the nutritional status of street children and coping mechanism (whether social, economic or psychosocial) these children adopt in order to satisfy their food needs, which will eventually determine their nutritional status. These are considered the underlying factors, which are being explored in-depth through the individual and the community. A case-control design is employed in the study where 174 underweight (case) and 126 children with normal weight (control) for their age were randomly selected as subjects.

A case study of a sub-sample children from the case and the control group is done to generate insights on the coping responses of street children. Data on the street children's activity, the care provided them, their health status and food intake are being collected by trained nutritionists using semi-structured interview-questionnaire with street children and key-informants as respondents. Information on the economic, social and psychosocial coping responses to food acquisitions of street children are also being collected.

Collected data will be analyzed for descriptive statistics, correlation analysis and risk and odds ratio using Statistical Package for Social Science Software. Case studies of sub-sample street children from the case and the control group will likewise be presented.

Results of the study could provide database that will be useful to government and child care institution in planning and strengthening programs in response to various needs of street children (nutrition, health and livelihood) to uplift the street children's well-being and eliminate barriers to their innate right to grow and develop. Moreover, the study could provide insights in the identification of specific objectives, formulate concise framework for an in-depth study of the underlying and immediate factors that may influence the nutritional status of the street children.

Emelita Balatibat

Food insecurity and child malnutrition in the Philippines: prevalence and related factors

Data analysis from 399 purposively selected households with 0-36 months old children was undertaken to determine the prevalence of household food insecurity and child malnutrition and to examine the possible relationship between child malnutrition and food insecurity in two ecological settings. The area of the study was in lowland and coastal villages in the province of Laguna and Leyte, respectively.

According to the regional Food Threshold level, food insecurity was prevalent in coastal areas (34 percent vs. 25 percent). An analysis of characteristics of food insecure households in the coastal areas shows that there was a significant association between food security status and the number of dependants, the education level and age of the mother, per capita income, and sources of income and ownership of assets. In the lowland area, the age of the mother, per capita income and sources of income were the risk factors of household food security.

Malnutrition prevalence was determined using the cut off level of minus 2 Z score of the NCHS reference. Underweight, stunting and wasting among 0-36 months children was highest in coastal areas (40 percent vs. 28 percent, 29 percent and 7 percent vs. 6 percent, respectively). In both areas, underweight and stunting was lowest among youngest age group 0-5 months, about 2 percent and 7 percent, respectively. By multiple regression analysis, explanatory variable age of child, household size and breastfeeding significantly influenced underweight and stunting among 6-36 months old children in lowland areas. None of the independent variables were significantly associated with wasting. In coastal areas, wasting was associated with the age of the mother, age of the child, per capita income and the number of dependants. In contrast to lowland, there was a relation between food insecurity and wasting e.g. nutrition security.

The study shows that food insecurity and child malnutrition are quite common but the relationship between the two differs according to ecological setting. In wage earning households in lowland, the income and food availability were less related to child malnutrition. In the coastal area where household income is equal to food produced, food and nutrition security coincides. Above food threshold, care and morbidity become the limiting factors to nutrition security. This suggests that livelihood security take precedence above food security. However, while livelihood security is a precondition to food security, the presence of the former does not always ensure the quality of children's diet.

Gerry van Nieuwenhoven

Coping mechanisms, livelihood strategies and food security of rural households in lowland and coastal villages in the Philippines

At the household level, access to micro finance can play a major role in food security strategies and offering financial services to poor people is considered as an appropriate intervention to give them the opportunity to rise above the poverty level and being able to meet their food needs. It is often assumed that the following causal chain, linking input and output and operating at household level, is effective: access to micro finance → rise of household income → increased household food security → nutrition security. Although systematic research on the impact of financial services is still scarce, there are empirical findings that suggest that micro finance services can improve income and food consumption levels of their clients.

However, until now, the financial market in the Philippines is hardly accessible for the poorer part of the population. It is estimated that around two third of the financial transactions take place in the informal sphere.

This study was undertaken to get insight in the so-called ‘material support systems’ (transactions in cash or in kind in the informal sphere) used by poor rural households and their role in food security. The principal hypothesis of the research is that access to (more) material support can improve the household food security of rural households. This study is intended to test this hypothesis empirically and investigate the mechanisms involved and conditions required.

Qualitative as well as quantitative research was done in villages in two ecological (coastal and lowland) settings. For the quantitative component, selected information from 200 households was collected during five periodic survey rounds, spread over twenty month’s period (1998/1999). For the qualitative component, additional information from 10 households per ecological area was collected as case study material over the same period. Besides, Focus Group Discussions with respondents, key informant interviews and price surveys were also conducted. Currently, a thesis is written to present the results of the study.

Siti Halati and Elviyanti Martini

Recent studies found that the effectiveness of dark-green leafy vegetables (DGLV) for improving vitamin A status was much lower than assumed. In order to examine to what extent parasitic infestation affects the bioavailability of provitamin A carotenoids from DGLV, a study was conducted among female factory workers in Jakarta. This paper will discuss both the implementation as well as the results.

Workers with parasitic infestation were randomly assigned to one of the following treatments: 1. Low-carotene, low-retinol meals; 2. Low-carotene, low-retinol meals and deworming; 3. Meals rich in β -carotene (5mg/d) from DGLV; 4. Meals rich in β -carotene (5 mg/d) from DGLV and deworming; 5. Low-carotene, low-retinol meals with purified β -carotene (2.5 mg/d); 6. Low-carotene, low-retinol meals with purified β -carotene (2.5 mg/d) and deworming. Two meals were provided per day for 5 days per week during 7-8 weeks.

Providing two meals of appropriate composition per day to almost 900 factory workers was very challenging. In addition, interviews blood collection and physical examinations had to be scheduled in such a way that the factory's output was not affected. A total set of baseline and endline data was available for 858 workers. At baseline, mean serum retinol and β -carotene concentrations were 1.45 $\mu\text{mol/L}$ and 0.35 $\mu\text{mol/L}$, respectively. The mean increase of serum β -carotene concentration, per group, was 0.05 $\mu\text{mol/L}$ (n=128), 0.12 $\mu\text{mol/L}$ (n=154), 0.23 $\mu\text{mol/L}$, (n=128), 0.26 $\mu\text{mol/L}$ (n=162), 0.55 $\mu\text{mol/L}$ (n=120), and 0.51 $\mu\text{mol/L}$ (n=166) respectively ($p < 0.001$). Thus the DGLV increased serum β -carotene concentration more than the low-carotene, low-retinol meals and the purified β -carotene increased it the most. Changes of serum retinol concentration were not significantly different among the groups. More detailed analysis will be conducted when data on infection parameters have become available.

Sabrina Zaman

Maximising the effectiveness of dark-green leafy vegetables in improving vitamin A status: dietary intervention and deworming in Bangladesh

Vitamin A deficiency is a serious health problem in reproductive age women and children in Bangladesh as it puts them at a greater risk of mortality, nutritional blindness, and morbidity. High dose vitamin A capsules are currently given to children younger than five years old and to women within one month of delivery. High dose supplementation is a costly long-term approach and cannot be given to everyone who needs it. There is a need for additional approaches like consumption of inexpensive, easily available Vitamin A rich foods like dark green leafy vegetables, yellow and orange fruits and vegetables as an alternative.

Recent research findings suggest that bioavailability of the provitamin A carotenoids from vegetables is lower than what has been assumed. Some important factors affecting carotene bioavailability are parasite infestation, nutritional status, food matrix, absorption enhancers etc. The study was conducted to assess effectiveness of deworming on bioavailability of vitamin A from dark green leafy vegetables and stages at which it affects (freeing from matrix/absorption/bioconversion or all).

The study was done with female factory workers living in Dhaka slums. Prevalence of parasitic infestation is very high among factory workers (> 80%). For the study 1,100 women were screened for parasites (worms and protozoas) in their stool. Half of the study population was dewormed in the beginning of the study and the rest at then end. Each group received two complete meals each day that only differed by the type of vegetables and beta-carotene content, for five days a week for eight weeks. After taking consent blood was collected for analysis of haemoglobin concentrations, serum retinols, carotenoids, acute phase protein and information on socio-economic status, morbidity, dietary intake, anthropometric measurements were collected before and after intervention.

The results which will be available soon will have impact at policy level regarding deworming, vitamin A capsule and steer further research into bioavailability of vitamin A from plant source.

Avita Usfar-Imran

Household coping strategies with food insecurity: comparisons before and after the onset of the 1997 economic crisis, Purworejo district, Central Java.

A longitudinal research with objectives to create model of responses to food insecurity and analyse factors associated with success or failure of those responses is being carried out in Purworejo, Central Java, Indonesia from February until October 2000. Financial crisis, which hit Indonesia in the middle of 1997, had triggered many consequences, among that food price inflation. Consumer price index for food has increased by more than 50 % in 1998. The research has been based on the idea of analysing that effect by comparing household pre-crisis condition with that of 3 years later. Available data in the study area are used as baseline. Some methods of data collection are repeated (food frequency questionnaire, anthropometry) while others are newly designed (in-depth interview, 8-days household food inventory and 3-days intra-household food distribution).

A total of 182 households have been interviewed using structured questionnaire between February-June. The households originated from 16 Sub-districts and 87 villages. Most households are located in rural area (86%) and in low altitude level (85%). Fifty-two percent heads of households are engage in farming activities, while 12% work in areas of services. Fifty-four percent heads of households are elementary graduates, while high school graduates are found to be 20%. Average household size is 5 with 2 dependent persons.

All respondents feel effect of the crisis, although the time it began and its severity is different between households. However, when asked specifically on food, only some admitted that they have difficulties in fulfilling certain food groups: staple food (15%); animal source protein (14%) and oil/fat (14%). A change of eating pattern by means of: consuming a less valued food items of the same food group, decreasing frequency of consumption, and decreasing portion size are hardly noticed. However, 15% households have consumed a less quality food in terms of rice and cooking oil.

Coping mechanism to overcome food difficulties varies. Provision of food throughout the year by planting crops is a common practice: 74% in the field, 78% have gardens. Farm animals are own by 85%. Other ways of supplying food directly to the house include: food collection from public sources such as fishing in rivers, finding eels in rice fields or collecting wild vegetables (26%); involve in food for work activities (12%), and barter (11%). Selling farm animals (26%) and borrowing money (20%) are other methods in providing cash to buy food. Families may decide to combine any of the above alternatives. Decisions to take specific coping actions were mostly made by women (wife).

Under-five year old children belonging to moderately undernourished (W/A <-2 SD) between the period Nov 1998-Jun 1999 were 5%. In 2000, (between February-June), no children were underweight, however 3% were stunted.

Theme 4:

Nutritional interventions and policies in relation to health issues

Siti Muslimatum and Marjanka Schmidt

Weekly vitamin A and iron supplementation of Indonesian pregnant women – the association between nutritional status, food intake and determinants of socioeconomic status

In Indonesian many pregnant and lactating women suffer from iron deficiency anemia and vitamin A deficiency. Women with marginal food intake and low socioeconomic status are at particular risk for micronutrient deficiencies. This article reports the association between socioeconomic characteristics of the household and food intake and nutritional status of Indonesian women. In addition the impact of vitamin A and iron supplementation during pregnancy on prevalence of micronutrient deficiencies during pregnancy and at ~4 mo postpartum.

Indonesian women who were 16-20 wk pregnant from 5 villages were randomly allocated on an individual basis to receive two tablets once weekly. Each tablet contained both iron and folic acid or equal amounts of iron and folic acid plus vitamin A. Pregnant women from 4 other neighboring villages with similar characteristics were recruited at the same time to serve as a control ('daily') group. These women had a free access to iron tablets from government health services. At enrollment, (socioeconomic) household characteristics, hygiene facilities, and pregnancy history were assessed. Anthropometric assessments and blood taking for the assessment of vitamin A and iron status were done at enrollment, near term and at ~4 mo postpartum. Food intake was assessed by 24-hour recall at 30 wk of pregnancy.

A large proportion of the women in our study had a marginal nutritional status during pregnancy and at ~4 mo postpartum while energy and nutrient intake were low. Lower nutritional status and energy intake were associated with household characteristics reflecting a lower socioeconomic status. Vitamin A supplementation during pregnancy reduced prevalence of vitamin A deficiency until ~4 mo postpartum. Energy intake of women and use of a latrine was positively associated with increase in serum retinol concentrations during pregnancy. Women in households with a monthly income had higher energy intake. In order to have a greater impact when doing an intervention aimed at improving nutritional status of women, the role of hygiene and socioeconomic variables should be taken into account. Considering the inadequate nutritional status of the women in the present study, interventions aimed at improving income or increasing food intake, integrating vitamin A and iron supplementation, would be beneficial.

Elvira Karyadi

Tuberculosis in Indonesia: nutrition and immune response

Tuberculosis (TB) is still a major health problem in the world and is one of the most important causes of death among adults in developing countries. Malnutrition is frequently observed during tuberculosis and is thought to influence host defense and thereby outcome of the disease. Contrary to what is commonly believed, little is known about the nutritional status with respect to micronutrient deficiencies. Even, the impact of micronutrient supplementation on TB treatment has not been studied extensively up until now.

We compared the nutritional status and cytokine profile between the TB patients and the healthy neighbourhood age and sex-matched controls. Thereafter, we investigated whether supplementation with vitamin A and zinc improves the efficacy of TB treatment with regard to nutritional status, clinical outcome and immune responses. The studies were carried out in newly diagnosed pulmonary TB patients aged 15-55 years in an urban area in Jakarta, Indonesia.

Compared with controls, TB patients had significantly lower nutritional status and deficiencies of iron, vitamin A and zinc. Low micronutrient status was more pronounced in malnourished TB patients, and it was associated with high concentrations of cytokines. A daily intake of 5000 IU of vitamin A (retinyl acetate) and 15 mg zinc (as zinc sulfate) together with standard TB regimen for 6 months improved the impact of TB medication during the first 2 months of treatment, and resulted in an earlier radiological resolution and sputum smear conversion. The higher reduction in concentrations of interleukin-6 in all patients as well as interleukin-1, interleukin-1 β and tumour necrosis factor- α in patients with cavities most probably reflect the accelerated healing process.

It is recommended that the beneficial effects of vitamin A and zinc supplementation during the first 2 months of TB treatment with assured family support should be taken into account in the development of TB control programmes.

Nasreen Huq

Political and organisational aspects of study design and information dissemination from the IB-ParVeg study in Bangladesh

The political and organisational aspects of study design and dissemination of findings are seldom-explored in health and nutrition research. These are critical issues for implementation and for persuading policy makers to prioritise interventions. The IB-ParVeg study explored the effects of a nutritional intervention on the nutritional status of women factory workers in Bangladesh and Indonesia. The key issues involved in the design and dissemination of the findings in Bangladesh are presented to stimulate discussion of these aspects of research.

The garments sector in Bangladesh with over 2,500 factories primarily employing poor women contributes 65% of the foreign exchange earnings of the country. Conducting research studies in the factories are difficult due to time pressures for production and shipment deadlines. Moreover concerns about working conditions by human rights groups make factory owners reluctant to give access to outsiders. This presented challenges in organising the study. Collaboration with *Phulki*, a woman's organisation that arranges child-care within the factory premises helped to overcome the barriers. *Phulki* became the advocate for the study and helped identify factories where the study could be implemented and convinced the owners about the benefits of the study which was implemented during the working hours despite the fact that it slowed the production at peak times.

Baseline findings revealed that women workers had poor nutrition and health status, which they attributed to overwork and underpay. The dissemination plan of the findings has to strike balance so that key groups are informed without the factory owners being subjected to harsh criticism. The support of the factory owners in surplus labour market is critical to develop interventions within the factories in the future. Specific groups targeted by this dissemination include worker's groups and unions, employers association and relevant government officials and policy makers.

Rosnani Pangaribuan

Vitamin A-programme evaluation: vitamin A capsule distribution as a possible tool for policy makers

Issue

In Indonesia, vitamin A deficiency has been a long –standing public health challenge, even though xerophthalmia was not a public health problem anymore in most of the provinces. Biannual high dose vitamin A capsules distribution has been implemented since 1970's as a blanket program but still preclinical vitamin A deficiency or marginal vitamin A status is a major concern as 50 % of pre-school children have serum retinol levels <0.70 µmol/L.

Aims

The purpose of this study is to evaluate the effectiveness of VAC supplementation program in increasing the serum retinol of children under five years old from different socio-economic background in urban and rural area of Central Java.

Study design

Cross - sectional survey is being conducted before and after supplementation in rural and urban area in Central Java.

Subjects and methods

360 children between 1-5 years are randomly selected and the blood is drawn one month before and after supplementation including anthropometric measurement. Mothers or caretakers are interviewed to obtain data on the socio-economic background, demographic data about the household and its members and also dietary intake of the children. Access and utilisation of community health services and receipt of VAC is also obtained.

Results

The study is currently ongoing and results will be available after second data collection and laboratory analysis.

Theme 5:

Methodological issues in food and nutrition research at household level

Soebagio Soemodiharjo and Idrus Jus'at

A study of food consumption and expenditure in Jakarta, South Sumatra and Yogyakarta

This study aimed at trying to better understand the difference between three different methods of dietary survey. These different methods were 1) consecutive twenty-four-hour recall at household level, 2) a one-week food account, and 3) household consumption as purchased in previous week.

The respondents were randomized from population in Jakarta, South Sumatra, and Yogyakarta both from urban and rural areas. The data collection was done in two different seasons, which was dry (July 1997) and rainy (December, 1997). To differentiate the food consumption pattern of urban and rural people, the location of this study was selected to take into account that deviation.

The results showed that the difference between three methods of dietary survey was consistent across the provinces, seasons and methods of data collection. The discrepancy of energy intake between the two techniques of calculation was about 500 to 1,000 kcal. The protein intake using food purchase method during rainy season was higher about 25 grams. While in the two provinces the seasonal variation in protein intake was not profound. The difference of fat intake between dry and rainy season in Yogyakarta using food purchase was remarkable. It was about 31 grams of fat higher during rainy season. Presumably the households bought or stored more vegetable oils and coconut since the access to market during rainy season might be limited or costly. While in two other provinces using the three methods, the difference were less than 10 grams of fat. Carbohydrate consumption in Yogyakarta collected by food purchase during rainy season was about 150 percent higher than that of dry season. In the other two provinces the differences were less than 65 grams. The three methods of dietary survey showed that there were almost no differences in iron intake either during rainy or dry season. The study also demonstrated that the three consecutive day-twenty-hour food recall at the household level disclosed a significantly lower energy, protein, fat, carbohydrate, and iron consumption compared to that of the other two methods. This is due to the fact that the former method gives a better picture of food-consumed daily by household members. The applications of food account and food purchase were assumed that any purchase was assumed that any food available during the week was all consumed.

Nasima Ahkter

An application of qualitative research methods for the development of nutrition interventions

This abstract describes methods and findings from formative research done as part of the IB-PARVEG study in Bangladesh. The purpose of this study was to explore the perceptions and experiences relating to *rokto kom* (an illness term meaning 'less blood') of young female garment workers in a factory in Dhaka, Bangladesh. Ethnographic methods, free-listing, and observation were used to explore beliefs about the causes, symptoms, and potential cures for *rokto kom*. In total, 65 in-depth interviews were conducted with workers by four local female researchers trained in qualitative methods.

Rokto kom was perceived to be a severe illness that affects quality of life and ability to work inside and outside the factory. The symptoms of *rokto kom* explained by workers were lack of energy, pallor, and susceptibility to other illnesses. Workers gave multiple explanations of the causes of *rokto kom*, the most salient of which was the inability to consume 'good foods' a domain that included vegetables, fruits, and animal products. These foods were believed to be rich in *vitamin*; workers explained that *vitamin* plays an important role in blood production within the body. Other explanations were rooted in the stress of their daily lives such as financial pressure, overwork, and the belief that electricity in the factory was 'pulling' the blood.

Many workers described their experiences seeking treatment from local doctors for *rokto kom*, indeed many of their beliefs may have originated from these consultations. Most workers felt that prescriptions given by doctors to rest, consume good foods, or even purchase dietary supplements were beyond their financial means. Thus, *rokto kom* was often seen as a condition that had to be tolerated because no viable treatment options existed. This study demonstrates the usefulness of qualitative methods to explore the perceptions of target populations during the formative stages of intervention development, particularly for interventions that involve behavioural change.