

SEA/NUT/147

Developing Applied Food and Nutrition Projects for Maternal and Adolescent Nutrition

Report of the Training Workshop

*Institute of Nutrition, Mahidol University
Salaya, Thailand, 17–28 May 1999*

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1. INTRODUCTION

An international training workshop on Developing Applied Food and Nutrition Projects was held at the Institute of Nutrition, Mahidol University (INMU) during 17-28 May 1999, with support from the South-East Asia Regional Office (SEARO) World Health Organization (WHO). The workshop was attended by 14 participants from 8 countries – Bangladesh, Bhutan, Indonesia, Myanmar, Maldives, Sri Lanka and Thailand – who included health and nutrition programme professionals at senior and middle management level. They represented national research institutions and national departments of health and family welfare. The workshop provided health and nutrition professionals from the South-East Asia Region a forum and an opportunity to develop realistic proposals in a priority area of nutrition research in their countries. The list of participants and resource persons is included in Annex 1.

The workshop was inaugurated by Dr. Kraissid Tontisirin, Director, INMU, Salaya. He reiterated the need to work closely within the Region and emerge strongly to address the nutritional problems facing the different countries in particular and the Region as a whole. A close look was required at the nutrition of mothers and especially adolescent girls, who were not sufficiently being targeted in the nutrition programmes of most countries. Regional experiences can contribute towards capacity building, ultimately leading to nutritional improvement. He commended the role of WHO in catalysing regional efforts and fully supporting INMU in conducting the workshop. The list members of organizing team is given in Annex 2.

Dr. Emorn Wasantwisut, Assistant Director for International Affairs, INMU, and Training Course Coordinator, gave an introduction to the workshop. She highlighted the objectives, which specifically aimed at building the local capacity of workshop participants to carefully design a proposed study, focusing on the theme, **Maternal and Adolescent Nutrition**.

2. OBJECTIVES

The objectives of the workshop were to:

- give participants an explicit understanding about how applied research is carried out so that they could design and implement projects on their own and be better consumers of research result;
- review the current situation of maternal and adolescent nutrition, state-of-the-art of nutrition interventions addressing key issues and concerns, and
- assist personnel from government and nongovernmental agencies to formulate effective applied research designs and proposals for maternal and adolescent nutrition projects.

The training schedule of the workshop is given in Annex 3.

3. PROGRAMME

A comprehensive survey of topics on applied food and nutrition in the context of maternal and adolescent nutrition-developmental programmes, community nutrition-action research and nutrition extension was undertaken, as part of the training content. The workshop enabled the participants to appraise their existing community nutrition programmes by discussing the strengths and weaknesses of their specific country situations. This approach helped them to work towards practical action strategies, which could be suitably applied in their contexts. The workshop was conducted for a period of 12 days and consisted of two phases.

3.1 Lectures and Presentations

In the first phase, which was the first week of the programme, lectures and participatory sessions on key themes of applied food and nutrition were conducted. The lectures were delivered by senior resource persons from UN Agencies such as WHO, FAO and UNICEF, the Health Research Systems Institute in Thailand and the Institute of Nutrition, Mahidol University.

Dr. Sunethra Atukorola, Associate Professor, Department of Biochemistry, University of Colombo, Sri Lanka was invited as a regional expert. Dr. Sultana Khanum, Regional Adviser (Nutrition) WHO/SEARO, provided valuable suggestions to country participants during their presentation of project proposals.

The UN Panel Presentation pointed to the need to evaluate a project proposal from a realistic perspective and get the viewpoint of international support agencies as to what is critical in project proposals.

Dr. Somchai Peerapakorn, National Programme Officer, WHO Thailand, reiterated the need for proposals to be within the mandate of WHO's General Programme of Work (GPW). Currently WHO was in the 9th GPW (1996-2001). Project proposals should be relevant to overall public health development and details should be clearly outlined in consonance with the guidelines laid down by WHO. While scientific methodologies are important, it is equally important to submit proposals relevant to plans of action between the government concerned and the country level WHO Office. Appropriate budget justifications are necessary and it is easier to get support for small projects which are within a shorter time frame.

Dr Biplab Nandi, Senior Regional Food and Nutrition Officer, FAO (RAP), highlighted the role of FAO as a catalyst and technical support agency. There is a need to develop integrated project plans with a context relevant to FAO's mandate. Technical Cooperation Programme project support was available from FAO, which would be provided for projects relevant to country priorities which should be within the realm of both agriculture and nutrition, in keeping with the ICN goals. Projects of 1-2 years duration could be planned, and it was desirable to involve stakeholders like NGOs and the government. Sustainability of a project/programme should be strongly considered while developing projects.

Mr. Nicolas Pron, Planning Officer, UNICEF (EAPRO), indicated that UNICEF generally supports projects specifically related to children's goals and their priority needs rather than fundamental/pure research areas. The project process is considered very important by the UNICEF. In keeping with the requirements of UNICEF, the outline of the proposal should be developed, giving details of project background or justification, a conceptual framework,

previous activities, objectives which are measurable and quantifiable, methodology, geographical areas of study, and project management. Institutional resource inputs will also be examined. Operational outcomes of UNICEF-supported projects are published through scientific bulletins/literature. Periodic, good reporting with detailed accounting of the funds is mandatory for subsequent disbursement of grants from UNICEF.

A special lecture on “Community-based approach in the prevention and control of low birth weight” was delivered by Dr. Kraisid Tontisirin, Professor and Director, Institute of Nutrition, Mahidol University. He mentioned that Asia was confronted with problems of undernutrition, overnutrition and food safety. Nutritional problems were widely prevalent among pregnant and lactating women and young children. The consequences of poor nutrition on the health, socio-economic status and productivity of the community should be well understood. Linkages between food and health related to food availability, accessibility, nutritional requirements, eating behaviour and utilization of food are important. Often, strategies used to prevent and control anaemia during pregnancy and reduce low-birth-weight, are relegated to mere service initiatives, instead of integrated community based programmes aimed at reaching the vulnerable groups. The context necessary for systematically planning, selecting and implementing community-based actions is that which combines the provision of multi-sectoral minimum basic services in the health, agricultural and educational fields in particular with local efforts, whereby the community can work to provide for its basic minimum needs. The interface between service providers (facilitators) and community leaders must be strengthened and a feasible community-based mechanism should be developed to reduce anaemia in pregnancy and consequent low-birth-weight. In Thailand 85% of women in the community are covered by full antenatal services, a fact which is attributed to people’s participation and the social mobilization process by which the community undertakes responsibility for improvement of its own nutrition and health. The status of regional nutritional problems of mothers and children as well as adolescent girls, prevention and control strategies and issues/challenges in policy and programme implementation, were reviewed in addition to the country case presentations.

Dr. Pattanee Winichagoon, Head, Division of Community Nutrition, INMU, stressed on the intergenerational link and referred to the vicious cycle of maternal and child nutrition. She gave an overview of the nutritional

situation of maternal and child nutrition in developing countries with particular reference to South-East Asia. Chronic malnutrition during growing years leading to maternal malnutrition has negative consequences, especially of micronutrient malnutrition, on both functional and reproductive performance and growth. Policy makers must be aware of the significance of maternal nutrition for the well-being of both mothers and children. Advocacy to invest in maternal nutrition must be strategically done and presented in connection with national development. Community-based nutrition programmes which are integrative of various components of nutrition as well as related determinants of malnutrition, should be strongly considered by programme planners and managers. Control of protein-energy malnutrition must be dealt with in an integrated manner rather than as a merely service-driven approach through isolated, vertical programmes. Researchers can contribute through their research capacities by developing assessment tools for monitoring and evaluation, identification of the etiology of problems in specific contexts, and testing the efficacy and effectiveness of specific interventions. They can work in conjunction with implementers to properly use the research process to address a country's problems, build capacities and strengthen programmes by identifying and eliminating barriers/constraints in the system.

Dr. Sunethra Atukorola, Associate Professor, Department of Biochemistry, University of Colombo, Sri Lanka, pointed out the issues and challenges related to adolescent nutrition in South-East Asia. She highlighted the fact that deficits acquired in childhood and adolescence would be carried through adult life unless corrected. Intervention programmes were necessary to improve the nutritional status of adolescents, to prepare them to fulfil their roles as well nourished, productive adults and parents. Studies carried out in Sri Lanka have determined the effectiveness of nutrition education and iron supplementation on the iron and vitamin A status of adolescent school girls in rural and urban areas. Educational programmes have thus focused on improving the overall quality of diets with special reference to iron and vitamin A, and attempts have been made to modify existing food practices rather than promote any new foods. Daily unsupervised iron supplementation for adolescent girls was found to be effective in improving iron status when preceded by nutrition education. Results suggest that nutrition education had a positive impact on the vitamin A and iron status of adolescent school girls in both rural and urban areas, but the sustainability was higher in rural than in

urban areas. Challenges to improving adolescent nutrition include bringing about desirable changes in attitudes and behaviour, improvement of knowledge and practices, identification of nutritional problems and contributory factors, improving living conditions and sanitation, and development of strategies to minimize social problems and prevent adolescent pregnancy.

3.2 Country Experiences

Country case experiences in maternal and adolescent nutrition presented by the country case teams indicated iron-deficiency anaemia (IDA) as being a problem of priority, widely prevalent among other nutritional problems.

The nutrition situation in **Bangladesh** highlighted malnutrition as accounting for 17% of under-five mortality, and anaemia and post-partum haemorrhage accounting for 26% of maternal mortality. In 1992, stunting was reported among 42% and wasting among 7% of under-five children. A low birth weight (less than 2.5 kg) prevalence of 31% was noted and 84% of LBW infants were small for date babies. Anaemia was noted in 74% of adult women, 80% of pregnant women, 73% underfives and 40% of adult men. Recent estimates show very low prevalence (less than 0.6%) of vitamin A deficiency and IDD status indicates that 250 million IQ points are at risk of being permanently lost. Recently, pockets of endemic areas of nutritional rickets have been identified. The soil in Bangladesh Integrated Nutrition Project (BINP) in 1993 revealed chronic energy deficiency (CED) as being very common among adolescent girls (unmarried girls above 10 years of age). Most of the girls in the project thanas had BMI below 18.5 and a much higher proportion in the non-project thanas had similar BMI values.

Several prevention and control programmes are in operation. The BINP operates at the national level, has a strong community-based nutrition component and promotes development of inter-sectoral nutrition programme. The Nutrition Surveillance Project (NSP) of Hellen Keller International (HKI) monitors child anthropometric status in addition to vitamin A capsule (VAC) distribution, emergency food aid, foodgrain intake at household level and home garden implementation as other programme components. The current programme for iron (60-120mg of elemental iron) and folate (500mg)

supplementation, which is under the jurisdiction of the Directorate of Family Planning, distributes iron–folic acid (IFA) to pregnant and lactating women. The IFA supplementation is likely to be expanded to cover adolescent girls in future.

In **Bhutan**, IDA among pregnant women is 60% with its prevalence being widespread among both non-pregnant and pregnant women and preschool children as well. VAD is also present among women while IDD, though prevalent, have been significantly reduced through commercial distribution of iodized salt. The prevalence of stunting is reportedly significant in Bhutan. Current prevention and control programmes have adopted tri-level actions addressing the immediate, underlying and basic causes of malnutrition. Maternal health programmes mainly aim to increase the coverage of antenatal services (from 51-80%) and increase the percentage of pregnant women (above 40%) having access to safe delivery and strengthen management and clinical skills at all levels, intensify social mobilization and family planning services, improve linkages between activities and sectors, and accelerate and sustain immunization coverage above 90%.

India still has several problems of malnutrition which are of public health concern. Owing to extensive maternal undernutrition, about a third of infants are born with low birth weight (less than 2.5 kg). Persistent undernutrition throughout the growing phase leads to short stature in adults. Nutritional anaemia constitutes a major health problem, affecting approximately half the population. Over 50% of pregnant women and between 50-60% of adolescent girls are anaemic. Anaemia is reportedly a major cause of maternal death due mainly to haemorrhage, septicemia and eclampsia. Important national nutrition programmes in India for the control of malnutrition include the National Nutritional Anaemia Control Programme, National Prophylaxis Programme for Prevention of Blindness due to vitamin A deficiency, IDD Programme, Mid Day Meal Programme and ICDS. A national nutrition policy has also been adopted. By the year 2000 AD, goals for reduction of LBW to less than 10% and IDA to 25% among pregnant women are to be achieved. Efforts through multi-sectoral collaboration and coordination are being directed towards the control of malnutrition.

In **Indonesia**, the maternal mortality rate (MMR) remains high (373/100,000 live births in 1995). Anaemia is noted to be the major

underlying factor for post-partum haemorrhage, which is also reported to be a cause of maternal mortality. Forty per cent of women (15-44 years) and 57% of girls (10-14 years) have anaemia. It is also observed that 35% of adolescent girls (15-19 years) have chronic energy malnutrition (CEM) which is attributed to the desire on the part of the adolescents to remain thin by the adolescents. 80% are reportedly anaemic.

Nutrition programmes aimed at improving maternal and child nutrition are many. The nutrition recuperation programme aims to improve the family food pattern with a long- term programme focusing on food-based dietary guidelines (FBDGs). The Family Nutrition Improvement Programme mainly monitors the nutritional status of children under 5 years conducted through the Integrated Community Health Post (Posyandu) with supporting activities of IFA supplementation to pregnant women, iron syrup for under fives, vitamin A for underfives and lactating mothers, iodized capsules for pregnant and lactating women in severe and moderate endemic areas, nutrition counselling by village volunteers, and home gardening empowerment. Nutrition services in health centres and hospitals are provided as part of the existing antenatal care and integrated management of child illness and in schools through the school system. Food and nutritional surveillance system (FNSS) and nutritional status monitoring system at district levels are being intensified so as to screen the severely malnourished and pregnant women having CEM. Monitoring the availability of food crops and early detection of food shortage are also maintained in coordination with the Ministries of Agriculture and Food and food logistics agencies.

Programmes aimed at improving adolescent nutrition are the Social Marketing and Promotional Programme, School Health Programme, Out-of-School Health Programme, Pre-marriage counselling activities, Nutrition Promotion of Youth and Women through religious gatherings and Anaemia Control Programme for female factory workers. Fortification and food enrichment programmes have been implemented through campaigns for increasing use of iodized salt, production of fortified instant noodles, promotion of the use of traditional herbs along with tamarind to possibly improve haemoglobin status, and potential fortification of wheat flour. Monitoring and evaluation is undertaken through the existing system of integrated recording and reporting from the health centre to the district health office and directly to the Ministry of Health.

In **Maldives**, anaemia is reportedly very common and one of the most important factors contributing to the prevailing high maternal mortality (68% of pregnant and 62% of non-pregnant women have haemoglobin levels below WHO standards). Anaemia is further aggravated by closely spaced pregnancies. The prevalence of anemia is also expected to be high in the adolescent groups. Breastfeeding practices need to be improved, especially with regard to increasing exclusive breastfeeding for the first four months. Worm infestation is reported to be as high as 70-75% in several atolls which is being addressed through de-worming programmes. Immunization coverage is one of the highest in the Region. The reportedly compromised nutritional status of women and children is mainly due to difficulties in procuring food, mainly fruits and vegetables at island level. Since food is largely imported, its purchase by the entire population becomes an expensive necessity.

The **Union of Myanmar** reportedly has about a third of children under five years with PEM, of whom 11.6% have PEM of a severe nature. Iron-deficiency anaemia is noted in 58% of pregnant women, 26% of adolescent girls and 30% of preschool children. Bitot's spots are observed in 0.3% of children in the 6 months to 6 years age group. A visible goitre rate of 25% is observed in the 6-11 years age group of children. IFA supplementation is provided for pregnant women and over pregnant women receive antenatal care with an average of 3 antenatal visits during pregnancy. Nutrition education emphasizing traditional food preparation methods, birth spacing programme, provision of antihelminthic drugs at hospitals, clinics and health centres and health education for malaria are other strategies available. Growth monitoring and nutrition counselling for children under 3 years and pregnant women are carried out, while supplementary feeding and nutrition educational community centres and hospital nutrition units for children are aimed at promoting the development of girls in Myanmar into well nourished and healthy mothers. Since IDA is the most widely prevalent deficiency in Myanmar, especially among mothers and adolescent girls, one of the future plans to ensure a better start in pregnancy is by supplementation of iron and vitamins during adolescence to benefit the future offspring.

Sri Lanka has an anaemia prevalence of 36% in the 11-18 years age group and 58-60% in pregnant women. Current prevention and control programmes are targeted largely to pregnant women and school children. These provide antenatal care (ANC)services, IFA plus vitamin

supplementation and worm treatment. There is also the Triposha programme. Rigorous health education is undertaken in schools and every child in the country has reportedly been examined by a medical officer as part of the school medical instruction programme. It was pointed out that while the system is in place for some of the above-mentioned target groups, there was a need to move towards more holistic programmes which would lead to meaningful solution of problems.

In **Thailand**, while overall undernutrition has greatly been reduced over the last decade, IDD, PEM, IDA and VAD continue to remain problems of varying extent and severity. Trends of overnutrition and obesity are increasing which are due mainly to change in social status, increasing urbanization and modification of eating behaviour.

Various countrywide strategies are in operation for control of the major nutritional problems. For IDD control, nutrition communication, iodine supplementation and distribution of iodine oil capsules are implemented which are supported by the government and nongovernmental agencies as well as Royal initiatives. PEM is being addressed by a comprehensive nutritional surveillance and monitoring system of children under five years. An integrated approach, through the promotion of agricultural production, multi-sectoral nutrition education, child care through day-care centres and treatment through health promotion and prevention is largely used. Anaemia control is undertaken by the provision of IFA supplementation to pregnant women who attend ANC clinics until delivery and for 3 months thereafter. Anthelmintics are given to all school children and iron syrup is especially given to malnourished preschool children. Appropriate mass media for pregnant women and school children have been developed at ANC clinics to strengthen the intake of iron tablets and consumption of iron-rich foods. Women volunteer groups have been established in villages to make communities aware of IDA, especially among young women, and to monitor pregnant women attending antenatal clinics. VAD is being addressed through vitamin A supplementation as a short-term measure and dietary improvement as a long-term action plan. A national surveillance system for assessing and monitoring vitamin A status among preschool children has also been planned which will be established after modification and validation of a simple dietary assessment method, especially in the North and Northeast of Thailand.

4. RESEARCH PROPOSALS

4.1 Constructing project proposals

Mr. George Attig, Consultant, INMU, presented each component of a research proposal and how it is to be prepared according to funding agency guidelines. He highlighted the functions of a proposal, elements of both good and bad proposals, the main sections of a proposal, a project summary and justification. With respect to the proposed research, essential features such as major objectives of the project, type of study to be conducted, the type of participants who will be included, major data that will be collected, methods to be used, methods of data analysis, the hypotheses that will be tested, and the major benefits of outcomes, were discussed. New features, techniques and skills, main problems anticipated, project description, budget and evaluation were the other aspects that were discussed.

4.2 Computer application for data analysis

The basic principles of microcomputer operations were introduced in this session. Ms. Nipa Rojroonwasinkul, Head, Department of Computer Applications and Statistics, INMU, highlighted the nature of computer equipment, data preparation, coding stages and assignment of variable names to the question. Examples of open-ended, closed, semi-closed, branching and pre-coded questions were also discussed. Code book preparation, components of code book entries, types of coding strategies, spot checking for errors, computer entry stage and cleaning data file were other aspects that were included. Database management and common statistical packages were briefly covered, particularly in terms of practical application.

4.3 Developing research design

Dr. Vongsavat Kosulvat, Assistant Professor, INMU, reviewed quantitative methodologies commonly used in food and nutrition research and how they fit in with specific research questions and basic information that needs to be collected for each design. Dr Vongsavat presented a conceptual framework

which showed how to get started in developing a research design. The steps in the research process were outlined and ways of classifying social research, types of research, types of investigation, basic features of quantitative research methods, key issues in planning a sound research project and the criteria for a good research question were explained. The technical and administrative aspects of planning a proposal were put forth. Survey research in terms of both descriptive and analytical aspects were discussed. The types of epidemiological study, decision making in selecting an appropriate design, criteria for selection of study design, survey methodology, the study population, sample size, variables, methods of data collection, credibility of measurement tools, analysis and cost of poorly designed survey research were aspects deliberated upon. Specifically, the essential elements of cross-sectional or prevalence studies, case control studies and cohort studies were dealt with. The design of a new study using a clinical trial was given as an example.

4.4 Qualitative methodologies in applied research and integration of qualitative and quantitative methodologies

This session by Dr. Jintana Yhounng Aree, Lecturer, INMU, helped to identify research problems suitably addressed by qualitative methodologies and understand commonly used collection methods, analysis and interpretation techniques for qualitative data. Participant observation was pointed out as being important in the use of these methodologies. Setting up of a focus group research was discussed in detail, citing relevant examples. It was pointed out that there is a need to adopt a developmental approach. Qualitative methodology can be well used in evaluation, wherein the initiation of change can be shown by the use of specific process indicators. The benefits of applying both qualitative and quantitative methods in data collection, analysis and interpretation were largely appreciated.

4.5 Effective monitoring and evaluation

This session enabled identification of techniques and strategies for monitoring and evaluating a project's processes, outputs, outcomes and impacts to

develop an effective evaluation plan. Dr. Somsak Chunharas, Director, National Institute of Health, Ministry of Public Health, Thailand, outlined what evaluation and good management are, and pointed out the difference between monitoring and evaluation. For example, relevance of the project, its coverage, progress, effectiveness, impact and efficiency are vital aspects to be examined. There is a need to identify the right indicators, design a good information system and have serious users of the project. Features of good indicators include their relevance to the study being evaluated, sensitivity and data availability. The type of data and data sources used in monitoring and evaluation were also discussed and the essential features of qualitative data were examined in addition to costing and its utilization. The context of an evaluation as well as designing a programme and planning an evaluation were presented. With effective monitoring and evaluation it would be possible to correlate national indicators over a period of time with the availability of actual programme costs.

5. DEVELOPMENT OF PROJECT PROPOSALS

In the second phase of the workshop, which comprised the subsequent week, intensive working sessions were organized, wherein country teams prepared detailed proposals to develop projects along with their facilitators. Guidelines for developing projects were appropriately adopted for the purpose. An interactive process was thus initiated and implemented through the working sessions.

Preliminary presentations of proposal outlines were made and scrutinized. This enabled identification of salient indicators of the project, and was followed by closed guidance by the facilitators, to refine and develop the project plans.

Detailed presentation of the project proposals and review sessions were subsequently held. Proposals were critically evaluated for their relevance and need in the concerned country, the feasibility, sustainability, community capacity building and its contribution to national development. Participants developed models of a conceptual framework for development and implementation of the project. Budget estimates were worked out and the potential of cost effectiveness and cost-benefit analysis was discussed.

Dr. Sultana Khanum, Regional Advisor (Nutrition), WHO/SEARO, Dr. Kraisid Tontisirin, Director INMU, and the faculty at INMU provided the participants with valuable suggestions to consider for subsequent finalization of their project proposals. Dr. Khanum stressed the need for participants to share their experiences of the training workshop with their colleagues in their respective countries. Dissemination of information and communication was essential for strengthening the team spirit and approach, while planning and implementing community-based programmes urging participants to form strong country teams, she pointed out that WHO strongly supports projects which provide **evidence-based data** and which eventually lead to **sustainable capacity building**.

A total of eight project proposals from the countries of the SEA Region were developed as described below:

5.1 Bangladesh

Beneficial implications of an integrated health package for elimination of anaemia among adolescent females in selected factories in Bangladesh.
(Dr. Momtaz Haque and Dr. Farida Siddique)

Previous countrywide efforts in Bangladesh in the prevention and control of anaemia have mainly consisted of the provision of iron-folic acid (IFA) supplementation for pregnant women, which did not cover adolescent girls. Provision of an integrated health package which includes multiple vitamin and mineral supplementation along with de-worming and health education is likely to be more effective in reducing of anaemia as compared to the routine provision of iron and folic acid. The study broadly aims to reduce the existing level of anaemia prevalence to 30% over a period of three months. It specifically aims to provide iron and folic acid and multi-vitamin supplementation along with deworming, determine the compliance of intake of supplements through an innovative health education check-list, record the weight and height measurements at periodic intervals, estimate blood haemoglobin levels at base line, mid-term and end of study periods, and develop a set of simple indicators to assess effectiveness of the administered package. The study would point to the benefits of multiple vitamin-mineral supplementation and intake of a balanced diet in reducing anaemia

prevalence among adolescent girls and prepare them for potential motherhood.

5.2 Bhutan

Magnitude of nutritional problems and associated factors among adolescents in Punakha district.

(Mr. Jamtsho Tshering Paydon)

Nutritional programme services provided to adolescent girls in Bhutan are presently ad hoc, and lack explicit information to formulate concrete and conducive interventions. The proposed study aims to provide baseline information and indicators on the magnitude of nutritional problems in adolescent girls between 10-19 years. The magnitude of problems is likely to reveal the nutritional status and prevalence of malnutrition and other micronutrient deficiencies in adolescent girls. This will enable transformation of nutrition indicators into appropriate actions that will benefit the less fortunate and vulnerable groups. The nutritional trends noticed will ultimately help to foster the development of a rational, realistic and relevant package to improve the nutritional status of adolescent girls.

5.3 India

Reducing iron-deficiency anaemia in adolescent girls through health care delivery system in Uttar Pradesh.

(Dr. Narika Namshum)

The National Anaemia Control Programme in India is targeted towards pregnant and lactating women and young children but there is no programme covering adolescents. The proposed study mainly aims to reduce IDA by 25% among adolescent girls by the end of two years. It will provide IFA supplements and education and counselling in selected villages as a pilot attempt using the existing health care delivery system. It will specifically improve the service delivery of the health providers to strengthen the logistics and supply of IFA and de-worming drugs and help to increase the consumption of iron-rich food consumption by the community. The study

outcomes are intended to facilitate formulation of the national policy for the control of nutritional anaemia among adolescent girls.

5.4 Indonesia

Improving knowledge, attitude and practice (KAP) among adolescent girls concerning anaemia and its prevention at junior high school in three districts of Indonesia.

(Ms. Annie Kurniawan and Penina Beben)

An operational study is to be carried out in 12 junior high schools of 3 districts of Indonesia, with the main objective of improving the KAP concerning anaemia and its prevention among adolescent girls and prepare them to become healthy mothers. It will specifically aim to increase the consumption of iron -rich foods and IFA tablets through an effective nutrition education package. The haemoglobin status will be assessed before and after the IEC intervention period in both control as well as intervention groups. The KAP levels will be determined before and after nutrition education and the impact of promotion of iron-rich sources will be evaluated before and after intervention.

5.5 Maldives

Selected food-related determinants of nutritional status among adolescent girls (14-16 years) in Maldives.

(Mrs. Zakiya Hassan and Mariyam Abdulla)

Little data exist in Maldives on the nutritional status of adolescent girls. Most Maldivian girls get married early and bear children in physiologically and nutritionally vulnerable states. An understanding and assessment of selected inter-related factors that influence their nutritional status can help to obtain vital links between nutrition and health which in turn would lead to action for nutrition improvement among adolescent girls. The study would examine channels of food access and availability to adolescent girls, determine their mode of dietary selection with an emphasis on micronutrient-rich fruits and vegetables, record specific food beliefs, meal pattern and dietary practices,

and assess nutritional status by anthropometric measurements. The data collected would serve as valuable preliminary information, to follow up with nutrition intervention targeted towards adolescent girls.

5.6 Myanmar

Reduction of iron-deficiency anaemia in adolescent girls in Kayin State. *(Dr. Htay Nuang and Dr. Than Oo)*

The study largely aims to reduce prevalence of iron-deficiency anaemia in adolescent girls to below 20% by the year 2001. It will attempt to improve health service delivery by basic staff and volunteer workers, determine the KAP of adolescent girls with regard to anaemia, the compliance of intake of iron tablets and anaemia prevalence. By the end of the study, it is expected that there may be increased awareness of KAP on nutrition and health promotion in the community and decrease in the prevalence of LBW and IDA.

5.7 Sri Lanka

Increasing compliance of daily iron supplementation during pregnancy by nutrition education in two districts of Sri Lanka. *(Dr. Dampali Jagoda and Dr. Ganga Rathnayake)*

Surveys in Sri Lanka have indicated an anaemia prevalence of 60% in pregnancy, in spite of iron- folate supplementation from the 12th week of pregnancy. Nearly 98% of pregnant women are reported to be availing of antenatal services from the public health care system in Sri Lanka. The proposed project plans to increase compliance of daily iron supplementation during pregnancy at least by 50% using an innovative nutrition education package in 2 districts of Sri Lanka. The KAP with regard to nutritional anaemia will be studied and compliance of IFA supplementation among pregnant women will be ascertained by using formative research. The nutrition education package will be developed which will be implemented along with facilitating supply of IFA. The Ministry of Health will be involved in monitoring the regularity of the supply of IFA. Haemoglobin levels will be determined to check if they have increased over the study period.

5.8 Thailand

Development of maternal nutrition package.

(Ms. Krongkaew Konnark and Mrs. Nuchpiya Riewpitak)

The Nutrition Division of the Department of Health in Thailand has developed a Food Exchange Model which serves as a tool for dietary improvement during the period of pregnancy. While it has been successfully used by nutritionists in ANC clinics in general hospitals, it needs to be adapted for use by health officers, especially in local areas. The proposed project aims to improve food consumption patterns in pregnant women by developing food-based dietary guidance and drawing up specific recommendations regarding nutritional allowances for pregnant women. It will also evaluate the process of using a "Maternal Nutrition Package" for health education during pregnancy.

6. EVALUATION

An evaluation of the workshop with regard to the session content, significance, clarity of presentation and time allocation revealed that collectively the participants benefited greatly from the sessions on community-based approaches to nutrition programmes, constructing research proposals and monitoring and evaluation methodologies. Issues and challenges related to both maternal and adolescent nutrition evoked a good response among participants, especially in terms of clarity in identifying practical nutritional challenges facing their countries. Quantitative and qualitative methodologies provided a good overview of the need to have a necessary mix of the two methodologies in action research. There seems to be a definite need for greater exposure to computer applications in developing applied nutrition projects. Statistical techniques and their applications need to be integrated strongly in project proposals/ applied research in order to improve the data quality and provide clear pointers for nutrition improvement. All participants suggested the need for more time and interaction for the working sessions, in spite of the extended duration already made available. The workshop gave indications of potentially positive steps among participants towards closer networking. The evaluation form is included in Annex 4.

Certificates of successful participation and achievement in the workshop were awarded to the participants.

Annex 1

LIST OF PARTICIPANTS AND RESOURCE PERSONS

BANGLADESH

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Annex 2

ORGANIZING COMMITTEE

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Mrs. Yupa Kalambaheti

Mr. Anusorn Voradirek

Mr. Wiroj Santayanon

Mr. Jam Rakchuhuen

Preparation of Report

Dr. Lalita Bhattacharjee

Annex 3

TRAINING SCHEDULE FOR THE INTERNATIONAL WORKSHOP

DEVELOPING APPLIED FOOD AND NUTRITION PROJECTS

MATERNAL AND ADOLESCENT NUTRITION

17-28 May 1999

Date	Topic	Teaching/Learning Objectives
May 17		
0900-1000 hrs	Workshop Inauguration	Introduction, objectives and outputs
1030-1200 hrs	What Funding Agencies like to see in proposals: UN Panel Presentation	To evaluate a project proposal from an international perspective and get a realistic view from international funding agencies as to what they look for in a project proposal
1300-1400 hrs	Issues and challenges related to Maternal and Child Nutrition in South- East Asia	To review situation of regional nutritional problems of MOTHERS AND CHILDREN, prevention and control strategies and issues/challenges in policy and programme implementation.
1400-1500 hrs	Issues and challenges related to Adolescent Nutrition	To review situation of regional nutrition problems of ADOLESCENT GIRLS, prevention and control strategies and issues/challenges in policy and programme implementation.
1500-1630 hrs	Country case experiences in Maternal and Adolescent nutrition (10 minutes each) Highlights: <ul style="list-style-type: none"> • Brief nutrition situation among these groups according to country context • Gap of knowledge in understanding determinants of maternal and child, and adolescent nutrition problems • Current prevention and control programmes 	To provide an opportunity for participants from each country to briefly describe the situation and current policy and programmes addressing maternal/child and adolescent nutrition. Knowledge gaps, barriers and constraints within each countries will be discussed.

Date	Topic	Teaching/Learning Objectives
May 18 0900-1200 hrs	Constructing Project Proposals Working session	To present each component of a research proposal and how they are prepared according to funding agency's guidelines.
1300-1600 hrs	Computer applications Exercise	To introduce the basic principles of microcomputer operation. Database management and common statistical packages are briefly covered, particularly in terms of their practical application.
May 19 0900-1200 hrs	Quantitative Methodologies in Applied Research	To review quantitative methodologies, commonly used in food and nutrition research, how they fit in with specific research questions and basic information that needs to be collected for each design. Techniques of data collection, management, analysis and interpretation are also covered, particularly in terms of their practical application in proposal development. Issues on design and sampling in applied research will be highlighted.
1300-1600 hrs	Exercise	
May 20 0900-1200 hrs	Qualitative Methodologies in Applied Research Integration of Qualitative and Quantitative Methodologies	To identify research problems suitably addressed by qualitative methodologies and explain commonly used qualitative data collection methods, analysis and interpretation techniques. To appreciate the benefits of applying both qualitative and quantitative methods in data collection, analysis and interpretation.
1300-1600 hrs	Exercise	
May 21 0900-1200 hrs	Effective monitoring and evaluation plans	To identify techniques and strategies for monitoring and evaluating a project's process, outputs, outcomes and impacts to develop an effective evaluation plan.
1300-1600 hrs	Exercise	

Training Workshop on Developing Applied Food and Nutrition Project for Maternal and Adolescent Nutrition

Date	Topic	Teaching/Learning Objectives
May 22-27 0900-1200 hrs	Working Sessions	Under the guidance of workshop facilitators, country teams will prepare detailed proposals according to guidelines set by chosen funding agencies to be implemented in their nations and aimed at addressing the most important problems related to maternal/child and adolescent health.
1300-1600 hrs	Working Sessions	
May 28 0900-1200 hrs	Proposal Presentations Moderator : Dr. Kraisd Tontisirin	To thoroughly review and provide constructive feedback for proposal revision and other suggestions to facilitate preparing final proposals for submission to donor agencies.
1300-1400 hrs	Proposal Presentations (contd)	
1400-1500 hrs	Evaluation and Discussion Moderator: Dr. Emorn Wasantwisut	
1500 hrs	Valedictory Ceremony	

Annex 4

**EVALUATION OF WORKSHOP
DEVELOPING APPLIED FOOD AND NUTRITION PROJECTS
MATERNAL AND ADOLESCENT NUTRITION
17-28 May 1999**

1. Please evaluate the workshop sessions with reference to the following attributes using the score scale given :

Score scale

Excellent : 5; Very good : 4; Good : 3; Satisfactory : 2; Needs improvement : 1.

			Clarity of presentation	Relevance/application		
1.	Community-based approach to the prevention & control of LBW					
2.	What funding agencies like to see in proposals					
3.	Issues & challenges related to maternal & child nutrition					
4.	Issues & challenges related to adolescent nutrition					

			Clarity of presentation	Relevance/application		
5.	Country case experiences in maternal & adolescent nutrition					
6.	Constructing research proposals					
7.	Computer applications					
8.	Quantitative methodologies in applied research					
9.	Effective monitoring & evaluation plans					
10.	Qualitative methodologies in applied research					
11.	Working sessions					

2. Kindly indicate :

- a) sessions which are less relevant & need modification
- b) suggestions for modification

Session	Suggested modification

3. Please evaluate the following components of supportive arrangements/logistics (use score scale given above)

- Accommodation

- Travel

- Food

- Communication with organizing team of workshop

- Hospitality

Food scientists, nutrition researchers in industry and academia; product developers, managers, and marketers. Table of Contents. Introduction. An Overview on Company Goal and Objectives of Nutraceutical and Functional Food Industries. Growth Pattern & Emerging Opportunities in Nutraceutical and Functional Food Industries: Market Analysis. He is also Associate Editor for the Journal of Functional Foods, Journal of the American College of Nutrition, and the Archives of Medical and Biomedical Research, and is also serving as Editorial Board Member of numerous peer reviewed journals, including Antioxidants & Redox Signaling, Cancer Letters, Toxicology Mechanisms and Methods, and The Original Internist, among others. Regional Workshop and Training of Trainers on Integrating Nutrition and Food Security programming for Emergency response and Resilience Building. February 2014, Nairobi, Kenya. The overall goal of the Regional Training Workshop Building capacity of humanitarian partners on how to better integrate nutrition and food security programming in order to maximize the nutritional benefits of emergency and resilience-building interventions in the Horn of Africa. The specific objectives The training workshop aimed to address the gaps and challenges faced by partners in integrating nutrition in food security in the region. The workshop intended to