

**Institute of Nutrition, Mahidol University (INMU)
Bangkok, 17-19 December, 2013**

Training Report

Application of Dietary Diversity Tool in Food Security and Nutrition Programmes

17-19 December 2013

Institute of Nutrition of Mahidol University

Bangkok, Thailand



**Food and Agriculture
Organization of the
United Nations**

Training Course on the Use of the Individual Dietary Diversity Tool for Food Security and Nutrition Programmes

**Institute of Nutrition, Mahidol University (INMU)
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This training course was organized by the Food and Agriculture Organization of the United Nations with financial contribution from the European Union in the framework of the projects *Support the strengthening of the National Food Security Information System* and *Improve Global Governance for Hunger Reduction*.

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Acronyms

DD	Dietary Diversity
DDS	Dietary Diversity Score
ESN	FAO Nutrition Division
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FCS	Food Consumption Score
FDG(s)	Focus Group Discussion(s)
FFQ	Food Frequency Questionnaire
FR	Food Record
HBS(s)	Household Budget Survey(s)
HDDS	Household Dietary Diversity Score
IMNU	Institute of Nutrition Mahidol University
MICS	Multiple Indicators Cluster Survey
USD	United States Dollar
WDDS	Women Dietary Diversity Score
WHO	World Health Organization

Introduction

Valid and timely nutrition assessment is the foundation on which effective interventions and programmes can be built to improve the food and nutrition situation of people. Standardized indicators are crucial for making cross-country comparisons, estimating trends and evaluating programmes and policies.

In the framework of a Letter of Agreement signed between the Food and Agriculture Organization of the United Nations (FAO) and the Institute of Nutrition of Mahidol University (IMNU), a three-day regional training course on the use of the *Dietary Diversity Tool for Food Security and Nutrition Programmes in Thailand* was held in Bangkok from the 17 to 19 December 2013.

The main purpose of the workshop was to develop capacity to validly and accurately assess the impact of actions for improving food and nutrition security through the use of a simple and valid food-based tool. The training course was focused on providing training and practical experience using the Dietary Diversity (DD) tool.

Dietary diversity is defined as the number of standard food groups consumed over a given reference period. The DD tool uses a qualitative open recall method to gather information on all the foods and drinks consumed over the previous 24 hours, which are then classified into standard food groups. It can be administered either at the household or at the individual level. This tool is particularly useful for assessing whether agricultural development, food security and nutrition education programmes effectively lead to more nutritious diets.

This tool, being easy to implement and analyze, is very relevant to countries, both at a national as well as at a decentralized level. The training course combined lectures, exercises and field work (see Annex 1 for the training course agenda). The training took place in the conference hall of IMNU and covered the basic concepts of the DD tool, its implementation, data analysis, its relevance to impact assessment and monitoring. During the second day of the training, participants learned how to adapt the DD tool to the local context through key informants and focus group discussions and field practice on administering the DD questionnaire to individuals at the household level.

This regional training course was attended by participants from nine countries (Afghanistan, Bangladesh, Cambodia, China, Mongolia, Lao PDR, The Philippines, Thailand and Vietnam)

Participants came from FAO country offices in the Region of Asia and the Pacific, ministries of agriculture and rural development, national institutes of nutrition, university professors, researchers and non-governmental organizations.

Training course summary

Day 1 – Classroom

The Training course was opened by Mr Vili FUAVAO, Deputy Regional Representative of the FAO Regional Office for Asia and the Pacific (FAO-RAP), who welcomed all the participants and briefly addressed the importance of conducting this training course in the context of improving food and nutrition security information systems in the region.

The floor was then given to the participants with a round of introduction: a full list of participants and a summary of their pre-training assessment survey are depicted in Annex 7 and 8, respectively.

An overview of the nutrition situation of the region was provided by Ms Nomindelger Bayasgalanbat, nutrition officer at FAO-RAP. Sixty percent of the world population lives in South-East and Eastern Asia countries where the world fastest growing economies are. However, the region presents remarkable differences in meeting nutrition targets: in South Asia, which has the greatest regional incidence of low birth-weight, 39 percent of children under five are stunted. On the contrary, East Asia and the Pacific region experienced the greatest decline in stunting with a 70 percent reduction in prevalence – from 42 percent in 1990 to 12 percent in 2011- largely due to progress made by China (prevalence of stunting in China decreased from more than 30 per cent in 1990 to 10 per cent in 2010).

Mr Warren T.K. Lee, Senior Nutrition Officer at the Nutrition Division, FAO, reviewed the workshop objectives and training plan. He emphasized that the DDS tool can be used for food and nutrition security assessments both at the household and individual level. The DDS is a measure of dietary quality and is a proxy of adequacy of macronutrient and micronutrient intakes. Some of the potential uses that were mentioned during his presentation are as follows:

At the national level the DDS can be used:

1. to monitor the quality of the dietary intakes of the population sub-groups;
2. to monitor and evaluate agro-food and nutrition intervention programmes (baseline and impact indicators);
3. in Early warning systems and vulnerability assessments of countries.

At the global level:

1. it provides standardized indicators and methodology to monitor and compare quality of dietary intakes within countries, across countries and over time;
2. it allows cross-cultural comparisons of dietary intakes in different regions;
3. it provides timely data to inform early warning systems for preparation of actions to ensure food security and to prevent starvation or famine.

During this training course, participants familiarized themselves with the methodology of the DDS tool, learned how to adapt the tool to the local context, how to apply it in the field, how to analyze the

collected data and critically appraise the strengths and weaknesses of the tool by taking into account their country-specific needs.

Mr Lee mentioned that, during the second day of training, there would be guided interactions between the participants and local people in a nearby village to familiarize with the use of the tool on data collection.

A summary of participants' expectations on the training course:

1. learn more about the DD tool;
2. learn how to conduct analysis, interpret and apply the DD tool;
3. know the strengths and weaknesses of the tool in comparison with other methods such as Food Consumption Score (FCS), Food Frequency Questionnaire (FFQ) and Food Record (FR), etc.;
4. understand what kind of quality/quantity information is collected;
5. understand how to apply the DD tool in a national nutrition surveillance system;
6. familiarize themselves in using the tool for research and knowledge dissemination;
7. understand whether the tool is applicable in specific country contexts, in refugee camp settings, to assess micronutrient deficiencies in children of 6-24 months of age and in rural populations;
8. exchange experience with other participants in the field of nutrition;
9. learn how to assess nutrient requirements based on age, weight, etc.;
10. understand why sometimes the household dietary diversity score is high whereas the quality/quantity of food is inappropriate/insufficient;
11. understand how to assess the safety of food;
12. understand how to plan appropriate food and nutrition strategy/policies at county level.

Expectations of the participants were recorded at the beginning of the course and compared with their achievements at the end of the course.

Marie-Claude Dop provided technical presentations beginning with an overview of the development of the DD indicator, its validation and an in-depth description of the DD tool. In the overview, the rationale for developing the dietary diversity tool was presented and the evidence base for dietary diversity as a valid proxy of the adequacy of nutrient intake was described. Dietary diversity is an indicator of food security when it is used at the household level (assessing access to foods) and a nutrition indicator when used at the individual level (an indicator of the nutritional quality of the diet). The general principle of the measurement of DD was presented, including different steps for its practical implementation. The importance of standardization was emphasized and the use of the tool was briefly outlined.

Marie-Claude Dop and the reporting officer (Giorgia F. Nicolò) provided a practical demonstration (role-play) of the method to conduct individual 24-hour recall interviews at the household level, how to classify the collected information into the table of food groups and probe the respondent for food groups not spontaneously mentioned.

Participants were invited to practice the method in tandems and then report in the plenary the difficulties they encountered. According to their feedback, the demonstration of the method was clear during the role play. It was further clarified that the recall method is meant to capture the diet of the individual on usual days and that, although this is not always possible, interviewers should aim at collecting information reflecting a typical diet. Days when the diet is atypical (such as feast days and ceremonies) should be excluded. Therefore, it was stressed that the timing for interviewing respondents at household visits need to be carefully planned.

During the afternoon, the process of coding the DD questionnaire was explained. The steps of the analyses of the survey data were described, e.g. including percent of subjects consuming each food group, constructing DD scores and indicators of special nutritional interest and assessing dietary profiles. DD scores are constructed differently for infant and young children (IYC DDS) and for women (WDDS). For the IYC DDS the seven food groups are an indicator of the quality of complementary feeding of infants and young children aged 6-23 months and the cut-point of four food groups was validated against adequacy of micronutrient density of complementary foods. For the WDDS, the nine food groups are an indicator of the micronutrient adequacy of women's diets, however, no cut-point for low or adequate DD score has yet been validated (a study is underway, the Women's Dietary Diversity Project-II).

Day 2 – Field work

The second day of the workshop was dedicated to “hands on practice” in a rural setting, to adapt the DD tool to the local context and to allow the participants to practice conducting discussions with key informants and focus groups while gaining experience in administering the questionnaire in a household setting.

ADAPTATION PROCESS

Activities of the second day started in the morning, by interviewing key informants and holding focus group discussions (FGDS) with several groups of women in different locations (approximately nine women of different age per group). Conducting FGDS in areas that will be part of survey data collection is a recommended procedure for adapting the DD questionnaire. The discussions dealt with the local food systems, including traditional and indigenous food availability, ingredients of commonly prepared mixed dishes including possible variations in the preparations of these dishes, and foods/ingredients consumed in very small quantities.

In particular, the facilitators and participants worked on the following questions, among others (see annex 3 for the complete list):

- What are the most commonly eaten foods in this area?
- What are the most common mixed dishes and what are the ingredients used in these dishes?
- What are the foods which will be seasonally available during the data collection period?

- What are the most common foods gathered from the wild? Think of green leafy vegetables, wild fruits, fish, insects, other small animals.
- Are there any vegetables or roots/tubers which have a dark yellow, or orange colored flesh inside?
- Are there any fruits available with dark orange, inside flesh?

Right after the discussion with the key informants, participants were taught how to classify foods listed during the previous exercise into the food groups. This discussion was handled in the plenary and participants were able to adapt the table of food groups to the local context (i.e. insert local foods in each of the food groups) and also the information on the most common mixed dishes prepared and consumed in the area (some examples are provided in annex 5)

IMPLEMENTATION PROCESS

Following the classification exercise, small teams of about five to six persons each (one facilitator, one interpreter and three-four participants) conducted household interviews, where the DD questionnaires were administered to one woman of reproductive age living in each household.

Some issues that were raised during adaptation exercise and required further clarification are listed below:

1. Classification into food groups is based on the botanical taxonomy of the plants as well as their content of specific nutrients.
2. Classification also needs to take into consideration the usage of a specific food item in the local diet.
3. When reporting mixed dishes, both usual and optional ingredients in the recipes should be clarified.
4. Questions should be asked in a very standardized way: remember not to forget drinks that could be a source of key nutrients.
5. Before implementing the tool, this should be quickly pre-tested in the context where it is going to be applied.
6. The survey should be conducted with an awareness of the different seasons in the area.
7. The survey should be conducted with an awareness of the seasonality.
8. When planning your interviews, ensure that there is an even distribution of your subjects across week days and week-ends in order to take into consideration any variation of food intake across the week.
9. If the diet of the respondent was very unusual on the day before the interview, the interviewer can reschedule for another appointment OR exceptionally ask about the day before (two days back).
10. Market days, birthday celebrations etc. should not be considered as exceptional days as they represent regular events in the life of people.

Day 3 – Classroom

Debriefing on the field work

Participants were asked to reflect individually and then discuss in small groups, on how the adaptation and implementation process went. In order to stimulate the discussion and recapitulate impressions and observations from the field work, a brief overview of the adaptation and implementation process of the tool was provided by Marie-Claude Dop.

Although the DD tool is universal, it needs to be adapted to the local context. Terms to be used in local language for setting questions need to be carefully chosen and used in a consistent way. A list of local foods needs to be developed, with names of foods in local language. Classification of all the foods in the appropriate food group needs to be done before a survey can be conducted. The list of local foods is integrated in the questionnaire that will be used in the field. Special cases, such as foods consumed in very small quantities, need to be discussed and decisions made for their classification. An inventory of common mixed dishes, including all usual and optional ingredients, is developed and field interviewers will use it for probing respondents when mixed dishes are consumed. Sweets and spices are always recorded in the 24-hour recall but are only counted in the Household Dietary Diversity Score (HDDS), as they are usually expensive foods and they are a measure of ACCESS to FOOD by the household.

To stimulate the discussion on the experience gained during the fieldwork, participants were asked to reflect on the following questions:

- Did the participants feel that the exercise we did the day before was an appropriate procedure for adaptation and pretest of the tool?
- Were the different steps of the adaptation and implementation process clear?
- What would you have done differently and why?

The following points were mentioned in the group discussion:

- ✓ For the adaptation process, participants felt that preliminary adaptation work should be carried out before going to the field as this is a process that requires more time, especially when interviewers are not familiar with the local culture.
- ✓ When adapting the questionnaire into the local culture, a nutritionist should be involved, the reason being that participants were not always sure on how to classify certain foods (e.g. to properly include the vitamin A rich foods into the right groups as well as make decisions on how to consider certain foods rich in nutrients but often used in variable quantities according to the local habits e.g. chili).
- ✓ Only some participants had the opportunity to actively take part in the FGD with the local women, due to time constraint.
- ✓ Participants were uncertain on how to classify and handle information regarding fortified foods: whether these should be recorded separately or not considered at all, and how to conduct an interview when the person consumed tinned foods.

It was clarified that the field day was to demonstrate the adaptation process and provide an opportunity to practice using the DD tool. The adaptation process may require several days of key informant interviews and focus group discussions in communities with diverse food cultures. Normally, some time is needed after the FGD to synthesize the information and incorporate these changes into the questionnaire forms.

Examples of the use of the tool in FAO field programmes

Results and interpretation of DD survey data collected by FAO (from Mozambique, Benin and Mali) where presented by Marie-Claude Dop.

Uses of the DD tool in the framework of FAO programmes were reviewed and strengths and limitations of the tool were discussed. FAO collaborated with the national nutrition organization in Mozambique where they used household dietary diversity to monitor consumption trends; for this purpose the survey was repeated in two different seasons (pre-harvest and post-harvest) to record the percentage of household or individuals consuming different food groups in two different periods of the year.

It was stressed that this is not an indicator of usual dietary intake, but it provides a snapshot of the consumption of a given community at a point in time. By means of proper sampling of the days of the week (between week days and week end days) during which interviews are conducted, the recorded consumption can be considered as a good reflection of the typical consumption within the community.

Cross tabulation between socio-economic status and consumption data can provide dietary profiles of the target population. The obtained results should only be interpreted at the group level/population level and never be used for targeting beneficiary individuals.

After this discussion, evaluation questionnaires were distributed to participants and cumulative results are reported in annex 7.

Recommendations

1. Extend the duration of the training to ensure that all participants have adequate time to practice the methodology (adaptation process and 24-hour recall in the real setting); consider separating lectures, adaptation and data collection in different sessions/days.
2. Provide better *clarity* on food group classification: consider including other criteria for classification, such as specific local usage of some foods.
3. Address more in detail the issue of food consumed in small quantities (e.g. whether to include foods into a specific food group or into condiments) but very rich in some nutrients (15 grams restriction rule).
4. Consider, in the long term and once the results of the WDDS study will be available, revising the DDS guidelines.

5. Devote more time to data analysis.

Follow-up actions

1. Further discussion with Prof. Pattanee Winichagoon of INMU on the possibility of adapting the DDS tool to better serve in countries with a broader variety or diversity of foods.
2. Follow-up on the possibility of incorporating the DDS into national surveys in Cambodia.
3. Follow-up on the expressed interest of participants from the Philippines to develop capacity for the use of the DD tool of nutrition workers at the national and local level.
4. Follow-up on the possibility of supporting the Thai-Burmese Border Consortium in using the DDS tool for collecting baseline nutrition data of Burmese refugees living in camps on the Thai border.
5. Consider to establish a mailing-list/blog for DDS users to facilitate exchange of information.

Closing of the training course

Closing remarks and acknowledgements were then expressed by Warren T.K. Lee, Gene Charoonruk, Deputy Director for Education and Special Affairs, and Visith Chavasit, Director of the Institute of Nutrition of Mahidol University.

Training Course on the Use of the Individual Dietary Diversity Tool for Food Security and Nutrition Programmes

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Annex 1. Agenda of the training Course on the Use of the Individual Dietary Diversity Tool for Food Security and Nutrition Programmes

Tuesday 17 December 2013		
Time	Topic	Speakers
08:30-08:50	REGISTRATION	-
08:50-08:55	Welcome Remarks	Assoc. Prof. Dr. Visith Chavasit, INMU Director
08:55-09:05	Welcome Remarks	Vili A. Fuavao Deputy Regional Representative for FAO Regional Office for Asia and the Pacific
09:05-09:15	Introduction and Administrative Matters	Dr. Gene Charoonruk, INMU
09:15-09:30	Overview of Food Security and Nutrition in Asia and the Pacific	Dr. Nomindelger Bayasgalanbat/FAO-RAP
09:30-09:40	Objectives of the training course	Dr. Warren Lee, FAO
09:40-10:00	What do the participants expect from the training course?	Dr. Warren Lee and Dr. Catherine Leclercq
10:00-10:30	Overview in the development of the Dietary Diversity (DD) indicators and validation	Dr. Marie-Claude Dop
10:30-11:00	Coffee/Tea Break and group photo	
11:00-11:30	Description of the Dietary Diversity tool	Dr. Marie-Claude Dop
11:30-12:00	Demonstration of the method (role play by Dr. Marie-Claude Dop as interviewer and Ms. Giorgia F. Nicolò as interviewee)	Dr. Marie-Claude Dop and Ms. Giorgia F. Nicolò
12:00-13:30	Lunch	
13:30-14:00	Coding, data analysis and presentation of the data	Dr. Marie-Claude Dop
14:00-14:30	Differences between the infant and young child indicators and women's DD score	Dr. Marie-Claude Dop
14:30-15:00	Group exercise (participants practise the method in tandems)	Dr. Marie-Claude Dop, Dr. Warren Lee, Dr. Catherine Leclercq and Ms Giorgia F. Nicolò
15:00-15:30	Coffee/Tea Break	
15:30-16:00	Group exercise: Discussion of difficulties	Dr. Marie-Claude Dop, Dr. Warren Lee, Dr. Catherine Leclercq and Ms Giorgia F. Nicolò
16:00-16:30	Need for adaptation of the DD tool to the local context	Dr. Marie-Claude Dop
16:30-17:00	Preparation of the field work (assign participants and interpreters to teams, and logistic details)	Dr. Marie-Claude Dop and Dr. Kitti Sranacharoenpong
17:00 -18:30	Buffet Dinner at INMU	

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Wednesday 18 December 2013		
Time	Activities	Leaders and Venue
08:00	Depart from Salaya Pavilion to Maha Sawasd Sub-district	Separate into 3 groups (details attached1)
09:00	Arrive at appointment venue at Maha Sawasd Sub-district	
09:30-10:30	Adaptation exercise with key informants	Dr. Marie-Claude Dop supported by Dr. Warren Lee, Dr. Catherine Leclercq and Ms Giorgia F. Nicolò at the appointed venue
10:30-12:00	Focus group discussions with local women and men	Dr. Marie-Claude Dop, Dr. Warren Lee, Dr. Catherine Leclercq and Ms Giorgia F. Nicolò at each appointed venue
12:00-13:00	Lunch	Maha Sawasd Healthcare Center
13:00-14:00	Classification exercise to finalize the questionnaires	Dr. Warren Lee and Ms Giorgia F. Nicolò at Maha Sawasd Healthcare Center
14:00-14:30	<ul style="list-style-type: none"> • Separate participants into 6/7 groups • Depart from Maha Sawasd Healthcare Center to each in-depth interview household 	Each group in the selected household
14:30-16:30	In-depth interviews	Each group led by Dr. Marie-Claude Dop, Dr. Warren Lee, Dr. Catherine Leclercq and Ms Giorgia F. Nicolò in the selected household
16:30-17:00	Depart from in-depth interview households to INMU	INMU
17:00	Buffet Dinner at INMU	INMU

Thursday 19 December 2013		
Time	Topic	Speakers
09:00-10:00	Debriefing of the field work	Dr. Marie-Claude Dop
10:00-11:00	Group Exercise: Analysis of results from field work	Dr. Marie-Claude Dop supported by Dr. Warren Lee, Dr. Catherine Leclercq and Ms Giorgia F. Nicolò
11:00-11:30	Coffee/Tea Break	
11:30-12:30	Group exercise continued : presentation of results	Participants
12:30-13:30	Lunch	
13:30-13:45	Examples of uses of the tool for FAO field programmes, strengths and weaknesses of the tool	Dr. Marie-Claude Dop
13:45-14:45	Analysis of previously collected data (with SPSS) in	Dr. Marie-Claude Dop supported by Dr.

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	small groups	Warren Lee, Dr. Catherine Leclercq and Ms Giorgia F. Nicolò in the computer room
14:45-15:15	Coffee/Tea Break	
15:15-15:30	Experience on developing the Dietary Diversity Score for pregnant women in Bangkok	Assoc. Prof. Dr. Pattanee Winichagoon
15:30-16:00	Final debriefing: discussion of how the participants will use the tool	Dr. Marie-Claude Dop
16:30-16:45	Wrap up and conclusions	Dr. Marie-Claude Dop
16:45-17:00	Training course evaluation	Dr. Warren Lee and Ms Giorgia F. Nicolò
17:00-17:30	Closing of workshop	Dr. Gene Charoonruk / Dr. Warren Lee/ and Visith Chavasit, Director of the Institute of Nutrition of Mahidol University.

Annex 2. Training Course on the Use of the Individual Dietary Diversity Tool for Food Security and Nutrition Programmes, detailed field work schedule for the 2nd day

Time	Activities	Venue and details
8.00	Depart from Salaya Pavilion to Maha Sawasd Sub-district	Separate into 3 groups
9.00	Arrive at the appointment venue in each separate group at Maha Sawasd sub-district	-
9.30-11.30	<ul style="list-style-type: none"> - Present the purpose of the discussion with the key informants and focus groups (FGDs) - Interview 8 village participants - Record conversation from the interview 	Each appointment venue
12.00-13.00	Lunch	Maha Sawasd Healthcare Center
13.00-14.30	<ul style="list-style-type: none"> - Discuss on the results of the Focus Groups discussions - Edit and finalize the questionnaire 	Maha Sawasd Healthcare Center
14.30-15.00	<ul style="list-style-type: none"> - Split participants into 6 groups - Depart from Maha Sawasd Healthcare Center to reach households for in-depth Interview 	Each in-depth Interview household
15.00-16.30	In-depth Interview	Each in-depth Interview household

16.30-17.00	Depart from in-depth Interview household to INMU	INMU
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Annex 3. Training Course on the Use of the Individual Dietary Diversity Tool for Food Security and Nutrition Programmes, questions for Focus Group Discussions (FGDs) and key informants interviewed

1. Discuss the meaning of **FOOD, MEAL, SNACK, STAPLE FOOD** (for example, how many meals per day? What kind of staple food? What are the other foods? When do they consume meals?)
2. Appropriate terms in local language for **FOOD, MEALS, SNACK, STAPLE FOODS**
3. List the **LOCALLY AVAILABLE FOODS**: what are those that will be seasonally available during the data collection period? (use the DDS food group table as a reference)
4. List the commonly prepared mixed dishes (Ask them for the ingredients, usual ingredients and optional ingredients)
5. Foods consumed in very small quantities
6. What are the most common foods gathered from the wild? Think of green leafy vegetables, wild fruits, fish, insects, other small animals.
7. Are there any vegetables or roots/tubers which have a dark yellow, or orange colored inside flesh?

Annex 4. Examples of locally available foods classified into the DDS food groups

Question No.	Food group	Examples	ตัวอย่างไทย
1	CEREALS	Corn, rice, sticky rice, wheat, barley, oat, noodles, chinese noodles, instant noodles	ข้าวโพด, ข้าวเจ้า, ข้าวเหนียว, ข้าวสาลี, ข้าวบาร์เลย์, ข้าวโอ๊ต, เส้นก๋วยเตี๋ยว (ทำจากข้าวเจ้า), บะหมี่, บะหมี่กึ่งสำเร็จรูป
2	WHITE ROOTS AND TUBERS	White potatoes, white sweet potato, taro root, white yam, konjac, white arrow root, water chestnut, root or other foods made from roots	มันฝรั่ง, มันเทศ (สีขาว), เผือก, มันแกว, หัวบุก, สาหร่าย, แห้ว, และอาหารอื่น ๆ ที่ทำจากหัว

3	VITAMIN A RICH VEGETABLES AND TUBERS	Pumpkin, carrot, sweet potatoes (orange or dark yellow flesh only) + other locally available vitamin A rich vegetables (e.g. red sweet pepper)	ฟักทอง, แครอท, มันเทศ และผักชนิดอื่น ๆ ที่มีวิตามินเอสูง (เช่น พริกหวานแดง)
4	DARK GREEN LEAFY VEGETABLES	Dark green leafy vegetables, including wild forms + locally available vitamin A rich leaves such as kale, spinach, coriander, broccoli, morning glory, phak-wan, neem leaves, oak fern, Ivygourd, sweet basil leaves, Sesbania young leaves (Yod Khae), cassia leaves (Bai Khi Lek)	ผักใบเขียวเข้ม เช่น คะน้า, ผักโขม, ผักชี, บร็อคโคลี่, ผักบุ้ง(ไทย,จีน), ผักหวาน, สะเดา, ผักกูด, ตำลึง, โหระพา, ผักกวางตุ้ง, ยอดแค, ใบชี่เหล็ก
5	OTHER VEGETABLES	Other vegetables e.g. tomato, onion, eggplant, cabbage, cauliflower, cucumber, white radish, pickle turnip, wax gourd, bottle gourd, sponge gourd, bitter melon, lotus stem, Sesbania flowers (Dok Khae), bamboo shoot, banana blossoms (Hua Pli), , Horse tamarind (Khra Tin), water mimosa, , Shallot spring, yard long bean, sugar pea, snap pea, mungbean sprout, wing bean pods, unripe papaya, mustard green, white chinese cabbage, ma-uek	ผักอื่นๆ ที่ไม่ใช่ใบเขียวเข้ม เช่น มะเขือเทศ, หอมหัวใหญ่, มะเขือเปราะ, กะหล่ำปลี, กะหล่ำดอก, แตงกวา, หัวไชเท้า, หัวไชโป้ว, ฟักเขียว, น้ำเต้า, บวบ, มะระ, สายบัว, ดอกแค, หน่อไม้, หัวปลี, กระถิน, ผักกระเฉด, ใบกระเพรา, ต้นหอม, ถั้วฝักยาว, ถั้วลันเตา, ถั้วแขก, ถั้วอก, ถั้วพู, มะละกอดิบ, ผักกาดเขียว, ผักกาดขาว, มะอึก
6	VITAMIN A RICH FRUITS	Ripe mango, ripe papaya, cantaloupe, persimmon (fresh/dried), and 100% fruit juice made from these + other locally available vitamin A rich fruits	มะม่วงสุก มะละกอสุก แคนตาลูป ลูกพลับ(สดและแห้ง) และน้ำผลไม้ 100% จากผลไม้เหล่านี้

7	OTHER FRUITS	Other fruits, including passion fruit, guava, water melon, dragon fruit, durian, Tangerine, banana (Nam-wa, Horm, Khai varieties), pineapple, rose apple, apple, pomegranate, grapes, pear, cherry, star fruit, rambutan, unripe mango, Longkong, mangosteen, longan, Sala, pomelo, prunes, wild fruits, and 100% fruit juice made from these	ผลไม้อื่น ๆ เช่น เสาวรส, ฝรั่ง, แดงโม, แก้วมังกร, ทูเรียน, ส้มเขียวหวาน, กัลฉวย (กัลฉวยน้ำว่า, กัลฉวยหอม, กัลฉวยไซ), สับปะรด, ชมพู, แอปเปิล, ทับทิม, องุ่น, สาลี่, เซอร์รี่, มะเฟือง, เงาะ, มะม่วงดิบ, ลองกอง, มังคุด, ลำไย, สละ, ส้มโอ, ลูกพรุน, ผลไม้ป่า และน้ำผลไม้ 100% จากผลไม้เหล่านี้
8	ORGAN MEAT	Liver, kidney, heart or blood-based foods or other organ meats	ตับ, ไต, หัวใจ, เลือด, และเครื่องในสัตว์
9	FLESH MEATS	Beef, pork, chicken, duck, other birds, insects and foods made from these such as kun-chieng, sausage, bacon, ham	เนื้อวัว, เนื้อหมู, เนื้อไก่, เนื้อเป็ด, เนื้อนก, แมลง, และผลิตภัณฑ์จากเนื้อสัตว์ เช่น กุนเชียง, ไส้กรอก, เบคอน, แฮม
10	EGGS	Chicken egg, duck egg, quail egg, egg tofu, preserved egg (Khai Yiaow Ma) or any other egg	ไข่ไก่, ไข่เป็ด, ไข่นกกระทา ไข่ห่าน ไข่เต่า ไข่เยี่ยวม้า และ อื่นๆ
11	FISH AND SEAFOOD	Fresh or dried fish or shellfish including snake head fish, catfish, Nile tilapia, silver barb, short jawed Barracuda (Pla Nam Dok Mai), squid, red snapper, white perch, mackerel + other products from these (e.g. fishball, fish sausage, Khun chiang pla, canned fish)	ปลาน้ำจืด ปลาทะเล สด/แห้ง และผลิตภัณฑ์ เช่น ปลาช่อน, ปลาดุก, ปลานิล, ปลาตะเพียน, ปลาน้ำดอกไม้, หมึก, ปลากะพงแดง, ปลากะพงขาว, และผลิตภัณฑ์จากปลา เช่น ลูกชิ้น, ไส้กรอกปลา, กุนเชียงปลา, ปลากระป๋อง ฯลฯ)
12	LEGUMES, NUTS, AND SEEDS	Dried beans, dried peas, lentils, nuts, seeds or foods made from these (eg. peanut, soy bean, broad bean, red kidney bean, black bean, macadamia, pigeon pea, Job's tear) + other food made from these [e.g. tofu (hard, soft), soy milk, mungbean noodles], coconut flesh or coconut milk	ถั่วเมล็ดไม่กลม ถั่วเมล็ดกลม ถั่วเมล็ดแบน ถั่วเปลือกแข็ง และเมล็ดพืชต่าง ๆ เช่น ถั่วลิสง ถั่วเหลือง ถั่วปากอ้า ถั่วแดง ถั่วดำ แมคคาเดเมีย ถั่วแระ ลูกเดือย และผลิตภัณฑ์ที่ทำจากถั่ว ตัวอย่างเช่น เต้าหู้ขาว เต้าหู้อ่อน น้ำเต้าหู้ นมถั่วเหลือง วุ้นเส้น เนื้อมะพร้าว และกะทิ

13	MILK AND MILK PRODUCTS	Milk, cheese, yogurt, icecream or other milk products	นม, ชีส, โยเกิร์ต, ไอศกรีม, และผลิตภัณฑ์จากนม
14	OILS AND FATS	Oil, fats or butter added to food or used for cooking (e.g. palm oil, soybean oil,)	น้ำมัน, ไขมัน หรือเนยที่ใช้ประกอบอาหาร (เช่น น้ำมันปาล์มโอเลอิน, น้ำมันถั่วเหลือง)
15	SWEETS	Sugar, honey, sweetened soda or sweetened fruit juice, sugary drinks, sugary foods such as chocolates, candies, cookies and cakes	น้ำตาล, น้ำผึ้ง, น้ำอัดลม, น้ำหวาน, อาหารที่มีน้ำตาลสูง เช่น ช็อคโกแลต ลูกอม คุกกี้ และเค้ก
16	SPICES, CONDIMENTS, BEVERAGES	Spices/herbs [e.g. galangal root (Kha), lemongrass, shallot, garlic, chillies, black/green pepper, curcumin, ginger, wild ginger, culantro(Phak Chi Fa Rang), condiments (e.g. salt, fish sauce, MSG, soya sauce), caffeinated drinks (coffee, tea), alcoholic beverages (Beer, wine, spirits), Holy basil leaves,	เครื่องเทศ/สมุนไพร (ข่า, ตะไคร้, ใบมะกรูด, หอมแดง, กระเทียม, พริก, พริกไทย, ขมิ้น, ขิง, กระชาย, ผักชีฝรั่ง), เครื่องปรุงรส (เช่น เกลือ, น้ำปลา, ผงชูรส, ซอสปรุงรส), เครื่องดื่มคาเฟอีน (กาแฟ, ชา) เครื่องดื่มแอลกอฮอล์ (เบียร์ ไวน์ เหล้า) ใบกะเพรา

Annex 5. Some most common mixed dishes

Dish	Ingredients
Green curry	Meat (chicken OR pork OR beef OR fish), eggplants, bamboo shoots, basil leaves, eggs (optional), chili paste (see ingredients below), coconut milk (optional)
Red curry	Same ingredients as green curry but chili paste with RED chili
Gang Som curry	Chili paste, fresh snake head fish, white cabbage, sebanese flower, freshly squeezed tamarind juice, fish sauce, palm sugar
Clear soup	Tofu, pork, chicken, white cabbage, green Chinese cabbage, carrots, chicken cubes, soy sauce

Hot soup	Water, chili paste, herbs (basil leaves, ginger, wild lemongrass, bergamot), fish (Nile tilapia), OR squid OR chicken OR beef)
Home made fresh chili paste	Shallot, garlic, chili (bird eyed chili), shrimp paste, salt, dried red chilli

Annex 6. Example of 24 hours recall table filled in during the field trip on the 2nd day of the training

Breakfast	Snack	Lunch	Snack	Dinner	Snack
Coffee, rice, mixed vegetables soup (Chinese cabbage, chicken, MSG), ripe papaya	Water	Sticky rice, papaya salad (grounded chili, lemongrass, shrimp paste, salt, all stir-fried with soybean oil) and then poured into boiling water where there are already eggplants, basil leaves, fish sauce)	Fried banana (unripe) with syrup (white sugar), water	Rice, mackerel fish (deep fried using white palm oil), boiled vegetables (ivy gourd and cucumber served with chili paste (shrimp paste, fish sauce, chili made of fresh mixed green and red chili) clear soup (ivy gourd, pork, pepper, water, palm sugar)	Ripe papaya and water

Annex 7. List of participants

N.	Title (Ms/Mr)	First name	Surname	Country	Organisation	Job title/position	Contact
1	Mr	Mohd Omar	OMAR	AFGHANISTAN	Ministry of Agriculture, Irrigation and Livestock (MAIL)	Planning and Coordination manager at DAIL, Laghman province.	0001momar@gmail.com
2	Mr	Farhad	ALKOZAI	AFGHANISTAN	Ministry of Agriculture, Irrigation and Livestock (MAIL)	MAIL focal point IPC programme (FAO/WFP)	mis.laghman@mail.gov.af
3	Ms	Aklima	PARVIN	BANGLADESH	FAO Field Project - GCP/BGD/049/USA	National Nutritionist	parvina.aklima@fao.org; aklima_bbf@yahoo.com
4	Mr	Mostafa Faruq Al	BANNA	BANGLADESH	Food Planning and Monitoring Unit, Ministry of Food	Associate Research Director	mostafa.banna@nfpcsp.org ; mostafa.banna@gmail.com
5	Mr	Samait	SOK	CAMBODIA	Council for Agricultural and Rural Development (CARD)	Assistant of Food Security and Nutrition System	soksamait@gmail.com
6	Mr	Koung Ry	LY	CAMBODIA	FAO Field Project - GCP/INT/108/GER	National Expert	koungry.ly@fao.org
7	Ms	Theresa	JEREMIAS	CAMBODIA	FAO Field Project - GCP/INT/108/GER	International Expert	Theresa.Jeremias@fao.org
8	Ms	Cheng	GUANGYAN	CHINA	Institute of Food and Nutrition Development, Ministry of Agriculture	Associate researcher	chengguangyan@caas.cn

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9	Ms	Khekthone	CHOMMANYVONG	LAO PDR	Department of Planning and Cooperation - Ministry of Agriculture and Forestry	Deputy Director of International Cooperation Division	khkthn@yahoo.com
10	Ms	Niphaphone	VANNARATH	LAO PDR	Department of Agriculture - Ministry of Agriculture and Forestry	Deputy Head of Planning and Cooperation Section	v_niphaphone@yahoo.com
11	Ms	Zuunnast	TSERENDEJID	MONGOLIA	Ministry of Agriculture	Senior Lecturer	znast_03@yahoo.com
12	Ms	Enkhmaa	DELEG	MONGOLIA	National Security Council	Food Security Officer	Enkhmaa@nsc.gov.mn
13	Ms	Maria Cecilia	PASTORES	PHILIPPINES	FAO Representative Office Philippines	Nutrition Consultant	mariacecilia.pastores@fao.org
14	Mr	Frederich Christian	TAN	PHILIPPINES	Nutrition Surveillance Division, National Nutrition Council	Nutrition Officer II	derich2287@yahoo.com
15	Ms	Maria Belina	NUEVA ESPANA	PHILIPPINES	Food and Nutrition Research Institute, Department of Science and Technology (FNRI-DOST)	Science Research Specialist	mbnespana@yahoo.com.ph
16	Ms	Warapone	SATHEANNOPPAKA O	THAILAND	Faculty of Public Health, Mahidol University	Asst. Prof. Dr.	warapone.sat@mahidol.ac.th
17	Ms	Nipa	ROJROONGWASINK UL	THAILAND	Institute of Nutrition, Mahidol University	Asst. Prof. Dr.	nipa.roj@mahidol.ac.th
18	Ms	Preeyalak	SATARANON	THAILAND	Thai Burmese Border Consortium	Nutritionist	pearl@theborderconsortium.org
19	Ms	Nisachol	CETTHAKRIKUL	THAILAND	International Health Policy Program, Ministry	Research assistant	nisachol@ihpp.thaigov.net

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					of Public Health		
20	Ms	Laksana	CHAIMONKOL	THAILAND	Dept Human Nutrition, Prince Songkla University	Lecturer	slaksana@bunga.pn.psu.ac.th
21	Ms	Nantaporn	VIRAVAT	THAILAND	Phramongkutklao College of Medicine & Phramongkutklao Hospital	Assoc. Prof. Col. Dr.	ntporn@hotmail.com
22	Mr	Tuang Dung	NGUYEN	VIET NAM	Ministry of Agriculture and Rural Development	Officer	Dung8206@yahoo.com
23	Mr	Duy Son	NGUYEN	VIET NAM	Food and Nutrition Surveillance, National Institute of Nutrition	Researcher	ngduyson88@gmail.com
24	Mr	Warren	LEE	FAO HQ	FAO	Senior Nutrition Officer	Warren.Lee@fao.org
25	Ms	Catherine	LECLERCQ	FAO HQ	FAO	Nutrition Officer	Catherine.Leclercq@fao.org
26	Ms	Marie-Claude	DOP	FAO HQ	FAO	Nutrition Consultant	Marieclaudedop@gmail.com
27	Ms	Giorgia Fiorella	NICOLO	FAO HQ	FAO	Nutrition Consultant	giorgia.nicolo@fao.org

Annex 8. A summary of the pre-training assessment survey

In 94 percent of cases, participants stated that their main area of responsibility at work is nutrition, followed by food safety and health.

Regarding the main activities participants are involved in and their role at work, nutrition surveys and assessments was mentioned in 81.25% of cases followed by research programs and projects related to nutrition, management of programmes/projects with specific nutrition outcomes and policy advice.

For 75% of participants, the majority of their working time is related to nutrition activities. Some specific activities that were mentioned are: programs/projects targeting children below 5 years of age, supplementary feeding programmes and improved family feeding.

Almost half of the respondents are NOT AT ALL familiar with the DDS tool (43.7%) whereas only 12.5% of participants who know the tool and have experience in using it. Half of the respondents are familiar with or have used other food security and nutrition assessment indicator such as food frequency questionnaires, anthropometric and biomarker indicators, food consumption score, Cornell-Radimer hunger scale, among others.

62.5% of respondents state that their institution provide training and/or staff resources to effectively monitor and assess projects' impact on nutrition while 100% of respondents consider the topics that will be discussed during the training course either relevant or very relevant to their area of work. In addition, 73% of respondents expect to be able to practically apply the DDS tool upon completion of the training while understanding its limitations, its specificities compared to other tools as well as data analysis and reporting.

Among other particular topic(s) that participants expect to be addressed by this training course and that are not in the agenda (or in the concept note provided) there are: a SWOT Analysis of the DDS and how to use the DDS in programs/projects planning and for influencing policy makers.

Aside from the knowledge that they will acquire during this training course, participants strongly expressed the need of being able of 1) Creating, analyzing and interpreting indicators from collected data, 2) Designing programmes/ projects/ studies for nutrition impact, 3) Choosing indicators for measuring outcomes and impact that make sense based on their particular activities and aims.

They also expressed the desire of obtain some reference materials, relevant reports, publications and periodical sharing of information by the organizer upon completion of the training.

Annex 9. End-of-training evaluation survey

The End-of- training evaluation was conducted by using questionnaires (see example below) that were distributed to the participants upon completion of the training course.

First part of the questionnaire refers to the overall quality of the training.

The clarity of the objectives as well as the relevance of the presentations were rated as good and very good by all the respondents. For the majority of the respondents there was sufficient time allocated to the discussion of the different topics (15 participants considered good the time allocated to discussion and 11 participants thought that it was very good, only 2 respondents considered it fair and/or barely sufficient). A comment was made that another day should be added to the total duration of the workshop in order to have more time for discussion.

There were **92%** and **100%** of the respondents rating good or above to the quality of the material and the quality of the trainers respectively. However, a couple of comments were made that more background and reference material should be provided to participants.

Second part of the questionnaire enquiries on how confident participants feel in conducting the different steps of the adaptation of the DDS questionnaire.

At least 65 percent of the respondents feel confident in conducting the different steps for the adaptation and use of the DDS (they rated 4 or above). 8 respondents out of the total, feel moderately confident in applying the tool and only 1 respondent scored 2 to this question.

The classification of collected info into food groups seems to be more problematic for participants. Only 15 respondents scored it 4 and above.

Comments pointed out that stricter criteria should be provided to guide participants in classifying the info into the food groups. In general, participants expressed the need of having more information to be fully confident in conducting the food group classification and that the food consumption culture play a major role in the deciding process (e.i. in deciding if a food needs to be considered as a condiment or not).

Focus group discussions: not everybody had the opportunity to participate in the FGDs and practice the methodology. In household interviews 95% of participants scored 4 and above. Only for 1 person the methodology needs to be further explained before applying it at household setting.

In data analysis and presentation, only 16 and 15 participants, respectively, gave the maximum scores (4-5). For the rest, more exercises are needed and the neither the analysis nor the presentation of the data is clear.

In general, the training fully met the expectations for 20 participants (more than 76 percent of the total).

Further comments provided by the participants are summarized below:

1. The training schedule is too tight and it can make it difficult for all participants to properly practice the different steps of the adaptation and interviewing process.
2. Clearer criteria would be useful for easing the classification of the info collected into the food groups
3. Further discussions are required about limitations and more examples of the use of DDS in the Asian context
4. Better understanding of how to extract the info /results of the analysis from the collected data (more lessons learnt, other country's experiences, etc.)

Annex 10. End-of-training evaluation questionnaire

Please rate the overall quality of the training					
	Weak	Fair	Good	Very good	
Clarity of the objectives of the training					
Any comment					
Relevance of the presentations					
Any comment					
Sufficient space allocated for discussion and exchange					
Any comment					
Quality of the material					
Any comment					
Quality of the trainers					
Any comment					
To what extent do you feel confident in doing each of the following? (rate 1-5)					
	1	2	3	4	5
Adaptation of the DDS to the local context (with key informants)					
Any comment					
Classification of collected info into food groups					
Any comment					
Conducting focus group discussions					
Any comment					
Conducting 24 hour-recall in household interviews					
Any comment					
Data analysis					
Any comment					
Data presentation					
Any comment					

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