

**WORLD HEALTH ORGANIZATION
REGIONAL OFFICE FOR THE WESTERN PACIFIC**

***Final Report on Community-Based Intervention Study of Food Safety Practices in
Rural Community Households of Lao PDR***

Report prepared by Ms Frances Warnock, WHO Consultant Food Safety Education
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EXECUTIVE SUMMARY

PURPOSE AND MISSIONS

Objectives:

“Report on the establishment of a model process for rural community education on food safety to adapt the WHO Five Keys to Safer Food in Lao PDR”.

Phase 1 (8 July-11 August 2007)

(1) Provide training on community-based studies related to food safety focused through a Hazard Analysis Critical Control Point (HACCP) and *WHO Five Keys to Safer Food*, to food safety personnel in Lao PDR.

(2) Assist staff of the Department of Food and Drugs (FDD) to develop the implementation plan of a two month study of rural communities to identify high risk food handling practices and pesticide usage practices based on observation of food production practices, food handler hygiene, food handling practices and temperature-time measurements of high risk foods.

(3) Provide training on how to conduct a community-based study related to food safety to 40 members of the Women's Union in Lao PDR.

Phase 2 (16 September-9 October 2007)

(4) Assist food safety personnel and Women's Union representatives in Lao PDR to organize and conduct workshops with Lao Women volunteers to (i) identify important food safety messages for selected rural communities; and (ii) develop these messages and the means for their transmission.

(5) Provide technical support on the development of suitable food safety training materials and training approaches for rural communities in Lao PDR.

Phase 3 (18 November-12 December 2007)

(6) Review reports of the community-based studies conducted and assess the factors that may have contributed to or hindered behaviour modification in Lao PDR.

(7) Provide a final report with recommendations on how to expand food safety education in rural communities in Lao PDR.

SUMMARY OF ACTIVITIES, FINDINGS, CONCLUSIONS AND GENERAL RECOMMENDATIONS

Between July 2007 and December 2007 the writer undertook three missions to Lao PDR to provide technical assistance and support to food safety personnel in the Department of Food and Drugs (FDD), Ministry of Health Laos, to conduct a community-based food safety intervention study in rural communities. The project built upon earlier work conducting food safety training workshops for Lao Women Union representatives from Phonehong District, Vientiane Province.

The current project, which was conducted over five months and in three phases, made further progress towards gaining a sound understanding of high risk food handling practices in rural households. Information gathered from a baseline study engaging Lao Women to observe food safety practices in 180 village households in Phonehong District formed the basis for developing an evidenced-based approach to food safety education aimed at behaviour change.

Specific activities included: training workshops followed by observation of household food safety practices and completing a food safety checklist tool (baseline assessment and final evaluation); taking time-temperature measurements of selected high risk foods/dishes; using the baseline assessment to develop key food safety messages and produce a food safety information poster specifically targeting rural households; dissemination of information materials to rural village households and Lao Women conducting small group education sessions; and a focus group feedback workshop with Lao Women and FDD to explore next steps in progressing this activity.

This food safety intervention study in rural households in Phonehong District has led to a better understanding of high risk food safety practices, and in particular, identified the consumption of raw meats and raw fish products to be a common practice among rural people and a significant problem. It has highlighted the importance of adopting an evidence-based approach to food safety education and not simply adapt/ translate existing information materials. Culture and traditional habits must be considered in food safety education programs if there is to be any impact on changing behaviours.

Involvement of the Lao Women's Union as a key partner to provide food safety education in rural communities, with training and technical support provided by FDD, has demonstrated to be quite a successful model. It is recommended that this collaborative approach continue and the education activity expanded to other Provinces of Lao PDR in 2008.

It is recognised that broad behavioural change requires years of consistent effort to achieve. But through sustained effort and action at the grassroots level in rural communities there is potential to mobilize community action and improve household food safety practices, thereby reducing the burden of foodborne illness in Lao PDR.

Financial resources are required to support this important food safety education work, and it recommended that funding be sought from the Government and International Agencies to ensure this important work continues in rural communities of Laos.

2. BACKGROUND

Between July 2007 and November 2007 the writer undertook three missions to Lao PDR to provide technical assistance and support to food safety personnel in the Food and Drug Department (FDD) Ministry of Health Laos to conduct a food safety intervention study in rural communities. The project built upon earlier project work with FDD conducting food safety training workshops for Lao Women. The WHO *Five Keys to Safer Food* messages and information regarding safe pesticide use/ reducing residues on fruit and vegetables were adapted for the rural community and formed the basis of training workshops. An important aim was to seek feedback from Lao Women on the most appropriate and relevant food safety messages for rural households, and preferred method for delivering those messages.

The next step in the process was to develop a better understanding of rural household food handling and hygiene practices, and to use this information in developing and implementing an evidenced-based approach to food safety education aimed at behaviour change.

3. PROJECT ACTIVITIES AND FINDINGS

3.1 Overview of Activities

Phase One: Training and Conducting Baseline Study of Rural Household Food Safety Practices

Staff of FDD and a senior representative of the Lao Women's Union participated in a training workshop with the writer from 30 July to 3 August 2007, to learn how to conduct a community-based intervention study on food safety involving rural village households. A *Food Safety Checklist Tool* based on the *WHO Five Keys to Safer Food* messages was developed during this workshop and trialled in the rural community (refer Annex 1). Temperature measurements of selected cooked foods were taken using a simple dial thermometer.

Following the workshop, FDD (six staff members), Lao Women's Union representative and the writer conducted a two day training workshop (6-7 August 2007) at Phonehong District, Vientiane Province. Thirty-six Lao Women representing 18 local villages (two from each village) attended the training workshop and two staff members from Provincial and District Food and Drug Units. The workshop program covered:

1. WHO *Five Keys to Safer Food*
2. How to conduct the food safety intervention study in rural village households
3. How to observe household food safety/ hygiene practices and

- record information using the Food Safety Checklist Tool
4. How to measure the temperatures of cooked foods using a dial thermometer

Trained Lao Women then worked in pairs to conduct an observational study of food safety practices in 10 households in their village during August-September 2007 (Baseline Study).

Phase Two: Development of food safety information material and village household education with Lao Women Volunteers

Results of the *Baseline Study* (Refer Annex 2) observing food safety practices in 180 rural village households in Phonehong District, Vientiane Province were reviewed with FDD during the writer's second mission. Food safety problems were together identified and two considered of most concern were targeted to address in rural community education.

The concept for an educational tool was explored with FDD in a brainstorming session. Key messages were developed and appropriate photographs selected to promote/ model correct food safety behaviours. Traditional Lao customs and eating habits were acknowledged. An A2 full colour poster was produced and 500 copies printed for use by Lao Women in rural community education.

A one day training workshop was conducted by FDD for 38 Lao Women from Phonehong District on how to use the new food safety information poster for rural household education. Practical demonstration showing how to wash hands properly using soap and poured water was also performed. Directly following this, trained Lao Women conducted small group education sessions (2-3 hours) for village households participating in the study. A small A4 information sheet covering the 7 steps of correct handwashing was also distributed.

Phase Three: Final Evaluation of Food Safety Education Intervention in Rural Communities engaging Lao Women

Observations of household food safety practices followed education. The Food Safety Checklist Tool was again used by the Lao Women but modified to include several questions addressing the traditional Lao custom of eating raw meats and raw fish.

Results of the second/ repeat survey were analysed with the writer during the third mission. Key issues were identified and changes in rural household food safety behaviours noted. The project concluded with a round table discussion involving the writer, staff of FDD (Provincial and Central) and representatives of the Lao Women Union (Provincial and District) to provide feedback on overall results of the food safety intervention study. Also, to share ideas on how to progress food safety education in rural communities of Lao PDR.

3.2 FINDINGS

3.2.1 Observations of Rural Household Food Safety Practices (Baseline Study)

Results of the Baseline Study of Rural Household Food Safety Practices are presented in Annex 2. A detailed report on this study was previously submitted following the writer's second mission (please refer to that report for further details).

In summary, two key issues were identified in the baseline assessment of rural household food safety practices. Firstly, while most food preparers were observed to wash their hands using water (in a single bowl) before preparing food and after handling raw meats and vegetables, one-third did not use soap. Secondly, more than one in three households observed ate raw meats/fish/shellfish. When analysed further, it was found that eight of the 18 villages involved in this study from Phonehong District ate raw meats and raw fish. Therefore, it was decided to investigate this issue further during the next phases of the household food safety intervention study.

3.2.2 Concept and suggested key messages for developing an educational tool for training in rural village households

LAO CULTURE

<i>TRADITIONAL WAY</i>	<i>TRADITIONAL WAY</i>
<p>Hands used to prepare food & for eating</p> <p>Handwashing: Use water only for washing hands and one bowl for all family members. Practice spreads germs onto food.</p>	<p>Lao custom and common practice of eating raw fish/raw meat.</p> <p>In the real situation common people eat raw foods such as raw fish and raw meats which can carry disease and affect liver and person's health.</p>
<i>WAYS TO IMPROVE PRACTICE FOR BETTER HEALTH</i>	<i>WAYS TO IMPROVE EATING HABITS FOR BETTER HEALTH</i>
<p>Clean hands for preparing food & eating</p> <p>Handwashing:</p> <p>Message:</p> <p><i>Always use soap when washing hands:</i></p> <ul style="list-style-type: none"> - <i>Before preparing food</i> - <i>After handling raw meats/ fish/ chicken and raw vegetables.</i> <p>Soap helps to remove germs from hands.</p>	<p>Family always cooks meat, chicken, and fish well done.</p> <p>Message:</p> <p><i>Every family should cook food – meat, fish and chicken – thoroughly before eating.</i></p> <p><i>Don't eat raw food it can be harmful.</i></p>

*Appropriate photos for rural community.

3.2.3 Findings of Repeat Study of Rural Household Food Safety Practices Following Education with Lao Women Volunteers

3.2.3.1 Methodology – Observational technique

The method used in this study which involved Lao Women observing rural household food safety practices has some limitations. There are inherent difficulties in observing exactly what people are doing; one may not see everything correctly. Data collected in these two surveys should not be considered exact. However, they provide a reasonable indication of trends and are useful for identifying key food safety issues.

3.2.3.2 Time elapsed between the training workshops on food safety for village households and conducting the repeat observational study was less than two or three weeks, and therefore too short a timeframe to expect any significant changes in food safety practices and behaviours.

3.2.3.3 Handwashing methods.

Positive improvements in handwashing practices (Tables 1&2) following education with the Lao Women can be attributed to the information provided to village households. Also, to provision of soap and hand towel as incentives for households participating in the study. The question to consider is whether washing hands with soap and running water will continue after the food safety intervention study has finished. Households would need message reinforcement and encouragement to purchase soap.

3.2.3.4 Custom of eating raw meats and raw fish.

One in three rural households was observed to eat raw fish and raw meats in the baseline survey, which was investigated further in the repeat observational study. Information in Table 4 *Cook well done*, shows that more than 90 percent of households cooked red meats, poultry and fish thoroughly with no pink or blood visible.

Table 5 provides a list of different foods eaten raw (range of red meats, fish and shellfish). Results represent what head/s of household said they eat raw when interviewed by Lao Women and not actually observations. Raw cow and buffalo meats are popular, as is the consumption of raw fish and shrimp. *Padec* (salty fermented fish sauce) appears to be the most common food eaten raw (could be considered ‘preserved’). Duck blood was also consumed by some 45 people in the 170 households surveyed.

When it comes to who is eating raw meats and raw fish – men or women (Table 7), twice as many men eat raw foods compared with women. Feedback during the Round Table discussion with Lao Women clarified it is mainly older family members (over 50 years old) and poorer people with little or no education who continue the Lao custom of eating raw meats and raw fish. The ‘new generation’ prefer to cook their meats and fish before eating. The main reasons nominated why people eat raw foods (Table 6) were “custom” and they taste “delicious”. Many people also believed that eating raw meats and raw fish “makes the body strong”.

Table 8: *Potential to stop eating raw foods (fish and meats) due to health risks* provides heads of households' responses to the question whether Lao men and women are likely to change this food habit if they were aware of the health risks. The clear majority believed that most people would change this high risk food safety behaviour if they were aware of the health problems caused. Confidence in women definitely changing the habit was stronger than in men (84% compared to 66%).

3.2.4 Factors contributing to, or hindering, food safety behaviour modification

3.2.4.1 Enablers

- a) *Education and information.* Knowledge and skills about how to wash hands correctly is a key factor accounting for the observed improvements in handwashing practices using soap. Key message promoted in the poster was clear and easy to understand.
- b) *Incentives.* Soap and hand towels were provided to households in the study as an incentive and gift for participation. This makes the 'safe' choices, easy choices.
- c) *Supportive network.* Trained Lao Women food safety educators provide a strong network available/accessible to village households.

3.2.4.2 Barriers to changing food safety practices

- a) *Lao Tradition and Customs.* It is unlike that Lao people who eat raw meats and raw fish (often elderly and the poor) will change this food habit and custom in the short – medium term. However, educational efforts should continue to target this high risk food safety behaviour to raise awareness about the risks to health from eating raw fish and raw meat products. At the same time, health benefits of cooking meats and fish thoroughly before eating should be strongly promoted.
- b) *Physical environment.* Eighty percent of the Lao populations live in rural and remote mountainous regions. Opportunities to reach all rural communities and provide food safety education will be extremely difficult.
- c) *Poverty.* It may not be possible for all village households in rural communities, especially poor districts and provinces, to implement the recommended food safety practices.
- d) *Education.* A World Bank Report on Lao PDR (2006) states that, “while the Lao language is generally spoken and understood by much of the population, literacy rates in rural areas are low; this may reduce the effectiveness of written materials that provide information to families about safe food preparation, water handling, and personal hygiene”.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 General Conclusions

This food safety intervention study conducted in Phonehong District, Vientiane Province has made sound progress towards gaining a better understanding of high risk food handling and hygiene practices in rural village households of Laos. While it is

documented that eating raw fish (including *padec* – fermented fish sauce) and raw meat dishes (such as *laj*) is common throughout Laos, this study has provided more insight into some high risk food habits and customs of rural people. It has highlighted the importance of following an evidence-based approach to food safety IEC activities, and not simply adapting and/or translating the WHO *Five Keys to Safer Food*.

The approach adopted, where trained Lao Women provide food safety education to households in their rural communities using food safety information and materials developed by FDD, has demonstrated to be an effective process and model for consideration when expanding this activity in the near future.

It is fairly recognised that broad behavioural change requires years of consistent effort to achieve and should also be closely aligned to socio-economic development of Lao PDR. Through sustained effort and action at the grassroots level in rural communities there is potential to mobilize community action and improve household food safety practices thereby reducing the burden of foodborne illness in Lao PDR.

4.2 General Recommendations

4.2.1 *Capacity building and sustainability.* It is strongly recommended that this model process for food safety education in rural communities engaging Lao Women and technically supported by FDD be further considered and strengthened in Lao PDR.

4.2.2 Funding to support food safety education in rural communities of Lao PDR should be sought from Government and International Donor Agencies.

4.3 Specific Recommendations

4.3.1 It is recommended that food safety education for rural communities and households be continued and expanded in Phonehong District, Vientiane Province. Strong interest was expressed in this regard from both FDD (Central, Provincial and District Levels) and the Lao Women's Union. There are 59 villages in Phonehong District (18 were engaged in this food safety intervention study) and 646 villages in Vientiane Province, representing some 73,750 families (*Source: Food and Drug Department Report 2006-07, Vientiane Province*).

4.3.2 Food safety education activity in rural communities of Lao PDR should be expanded in 2008 to involve a further two Provinces - one in northern Laos (Luang Prabang) and another in southern Laos (Attapau). This would allow possible differences in food safety practices, eating habits and customs to be explored over different geographical regions.

4.3.3 Lao Women food safety 'educators' in rural villages should be offered further training by FDD on how to present food safety information to households to encourage positive behaviour change.

4.3.4 Technical assistance and support should be provided to FDD to strengthen knowledge and skills in food safety information and education, and behaviour change communications.

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2. Ms Davone Symeangvong, Deputy Director of 3 Good Division, Development Department of the Lao Women's Union for her commitment to bring the Lao Women into the project and encourage their active participation.

ANNEXES

ANNEX 1. Food Safety Checklist Tool (Modified)

OBSERVATIONS - <i>WHAT VILLAGE HOUSEHOLDERS DO</i>	Tick
<i>KEEP CLEAN</i>	
HAND WASHING <i>When</i> <ol style="list-style-type: none"> 1. Food preparer washes hands before preparing food 2. Food preparer washes hands after handling raw meats, raw fish & raw vegetables 3. Do not wash hands <i>How</i> <ol style="list-style-type: none"> 4. Dish of water used by all family members 5. Running water/ tap no soap used 6. Use soap when washing hands 	
<i>SEPARATE RAW AND COOKED</i>	
<ol style="list-style-type: none"> 7. Raw meats, fish, chicken, frog, snail, shrimp, crab separated from cooked food 8. Separate cutting boards used for raw meats, vegetables & cooked foods; How many cutting boards? 9. Do not use same knife for cutting raw food, vegetables & cooked foods: How many knives? 	
<i>COOK THOROUGHLY</i>	
<ol style="list-style-type: none"> 10. Cooked red meats and chicken <i>well done</i> with no pink meat, no blood 11. Cooked fish with no pink meat and blood 	
LAO CUSTOM OF EATING RAW FISH AND RAW MEATS <ol style="list-style-type: none"> 12. Eating raw fish, raw shellfish, raw red meats etc <ol style="list-style-type: none"> (a) Fish (b) Shrimp (c) Crab/snail (d) <i>Padec</i> (e) Cow (f) Buffalo (g) Pig (h) Chicken (i) Duck blood 13. Main reasons why people eat raw fish and raw meats? <ol style="list-style-type: none"> (a) Delicacy that tastes good (b) Lao Custom (c) Makes body strong (d) Other reasons 14. Sex of Householders eating raw fish/raw meats <ol style="list-style-type: none"> (a) Men (b) Women 15. Do you think that people would stop eating raw fish and other raw meats because of the risks to health? <ol style="list-style-type: none"> (a) Yes (b) No (c) Maybe 	

Note: Questions 12-15 – *Households need to be asked these questions*

ANNEX 2. Findings of Baseline Study Rural Household Food Safety Practices

A. Demographic social information

Table 1: Location distribution by sample

No.	District & Province	Frequency	Percent
	Phonehong District, Vientiane	Households	
	Province Lao PDR	N=180	100

Table 2: Age distribution by sample (Note: Covers 171 households only)

No.	Age	Frequency	Percent
1.	10-20 years	14	8
2.	21 - 25 years	76	42
3.	>30 years	81	45

Table 3: Sex distribution

No.	Sex	Frequency	Percent
1.	Female	178	99
2.	Male	2	1

Table 4: Level of educational distribution by sample

No.	Education	Frequency	Percent
1.	No school	8	4
2.	Special course/adult education	4	2
3.	Primary school	45	25

4.	Secondary school	62	35
5.	High school	54	30
6.	Other	7	4

Table 5: Sewage and garbage management

(Note: more than one method may be listed)

No.	Activities	Frequency	Percent
1.	Throw anywhere around house	3	2
2.	Bury in digging hole	39	22
3.	Burn	136	76
4.	Other	26	14

Table 6: Main Water source

(Note: more than one water source listed)

No.	Activities	Frequency	Percent
1.	Drinking (potable) water	175	97
2.	Boiled	18	10
3.	Underground (pump)	12	7
4.	Well	12	7

B. Observed Food Safety Practices in Households Recorded Using Food Safety Checklist Tool

Keep Clean

Table 6: Occasion of handwashing practice among the samples

No.	Occasion	Frequency	Percent
1.	Before food preparation	170	94
2.	After handling raw ingredient	157	87

Table 7: Method of handwashing practice among the samples

No.	Current practice	Frequency	Percent
1.	Bowl/dish of water	151	84
2.	Tap water or water pouring by someone	54	30
3.	Washing with soap or ash	120	67

Table 8: Food preparation space/place

No.	Food preparation places	Frequency	Percent
1.	Separated kitchen	149	83
2.	Clean utensils for eating & cooking	176	98
3.	Food preparation at level of or above knee	126	70
4.	Covering cooked food properly	176	98
5.	Presence of pet, rodent, chicken, duck, dog	13	7

Separate raw and cooked food

Table 9: Separation raw and cooked food

No.	Activities	Frequency	Percent
1.	Separate raw meat, fish, chicken, frog, snail, shellfish separated from cooked food	155	86
2.	Separate chopping board for raw and cooked food	171	95
3.	Separate knife for cooked food and raw food	158	88

Cook thoroughly

Table 10: Cook well done

No.	Description	Frequency	Percent
1.	No pink or blood inside the cooked meat, chicken, seafood, etc	88	
2.	Fry meat, fish, chicken, seafood boiling oil	96	
3.	Soup is boiling or steaming	167	
4.	Rice/ sticky rice	132	

Note: Households prepared more than one dish. Percentage cannot be calculated as the total number of households observed preparing each food item was not recorded.

Table 11: Temperature of cooked food immediately after cooking

No.	Temperature at 70°C and above	Frequency	Percent
1.	Grilled meat, chicken, seafood, etc.	82/88	93%
2.	Fried meat, fish, chicken, seafood	87/96	90%
3.	Soup	152/167	91%
4.	Cooked rice/sticky rice	119/132	90%

Table 12: Duration of keeping cooked food before eating

No.	Duration	Frequency	Percent
1.	Less than 2 hours	142	>79%
2.	More than 2 hours		

Note: 38 people did not understand and/or complete this section

Use safe water and raw materials

Table 13: Using water and raw material for food preparation

No.	Activities	Frequency	Percent
1.	Washing vegetable and fruit before eating	179	100%
3.	Eating raw fish, shellfish, meat, paste-fish	55	31%

ANNEX 3. Results of Observational Study of Rural Household Food Safety Practices Following Education with Lao Women Volunteers

District & Province	Frequency	Percent
Phonehong District, Vientiane Province	Households	
	N=170	100

Keep Clean

Table 1: Occasion of handwashing practice

No.	Occasion	Frequency	Percent
1.	Before food preparation	170	100
2.	After handling raw ingredient	160	94

Table 2: Method of handwashing practice

No.	How hands washed	Frequency	Percent
1.	Single dish of water used by all family	19	11
2.	Tap water or water pouring	161	95
3.	Washing with soap	159	94
4.	Use hand towel or tissue after washing	170	100

Separate raw and cooked food

Table 3: Separation of raw and cooked food

No.	Activities	Frequency	Percent
1.	Raw meat, fish, chicken, frog, snail, shellfish separated from cooked food	159	94
2.	Separate chopping board for raw and cooked	170	100
3.	Separate knife for cooked food and raw food	169	99

Cook thoroughly

Table 4: Cook well done

No.	Description	Frequency	Percent
1.	Cooked red meats, chicken, fish well done with no pink or blood visible	156	92

Custom of eating raw meats and raw fish

Table 5: Foods eaten raw

No.	Food Item	Frequency	Percent
1.	Fish	40	
2.	Shrimp	41	
3.	Crab or snail	1	

4.	<i>Padec</i> (salty fermented fish sauce)	78
5.	Cow	69
6.	Buffalo	66
7.	Pork	5
8.	Chicken	0
9.	Duck blood	45

Note: *Information recorded refers to the number of people – men and women - (not households) who said they eat specific raw foods*

Table 6: Main reasons stated why people eat raw fish and raw meats

No.	Food Item	Frequency	Percent
1.	Delicious	62	
2.	Custom	77	
3.	Makes body strong	39	
4.	Other reasons	31	

Note: *More than one option can be selected*

Table 7: Sex distribution of those eating raw meats

(N=125)

No.	Sex	Frequency	Percent
1.	Female	41	33
2.	Male	84	67

Table 8: Heads of Households' beliefs that men and women would stop eating raw fish and raw meats if they knew about risks to health

Distribution by sex	Responses	Frequency	Percent
1. Women:		(n=97)	
	Yes	81	84
	No	2	2
	Maybe	14	14
2. Men:		(n=127)	
	Yes	84	66
	No	10	8
	Maybe	33	26