

# Improvement of Nutrition Knowledge and Practices Among Reproductive-Aged Women Through Participatory Communication in Two Communes of Yenthe District in Bacgiang Province, Vietnam

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## ABSTRACT

Over the years many approaches have been used in communication for behavioral changes in nutrition. The overall aim of this study was to provide practical insights into how participatory, audience-centered communication activities can be effectively used for imparting information and for behavioral change promotion on the topic of dietary diversity and micronutrient nutrition, among reproductive-age women in Vietnam. The communication initiatives for improving nutrition knowledge and practices of the women in two selected communes (Dongky and Donglac) in Bacgiang province were carried out from January, 2003 to December, 2005. The Dongky commune was selected as the intervention commune, while the Donglac commune served as the control. In the intervention commune of Dongky the problems and strategies of nutrition communication and education were defined, IEC materials and some seeds of iron-rich vegetables and fruits were provided. Besides that, a contest on nutrition knowledge at a primary school and a competition between nutrition collaborators were held. The results of the study showed that food consumption of the women in both communes improved compared to levels at the baseline survey, especially in the intervention commune. The total knowledge scores and the nutrition practices of the women in the Dongky commune significantly improved compared to the data at baseline and were higher compared to that of the control commune.

## INTRODUCTION

Micronutrient malnutrition, especially among young children and women of child bearing age, continues to be a major public health concern in many low income countries including Vietnam. Commonly used strategies to improve micronutrient nutrition include mass-education on micronutrients, maternal and child health

(MCH) activities, breast feeding promotion, standardized leaflets that are distributed through the health services, and radio spots. These are often produced centrally and distributed globally with limited pre-testing or follow up research into the appropriateness and effects in terms of changed behavior among different sub groups of the intended audience/target groups.

In many countries important improvements in micronutrient nutrition have been achieved through changing practices at the household level and through protecting traditional nutritional practices that are beneficial (FAO/ILSI, 1997). Successful communication strategies are an important part of such interventions.

Among the core features that countries have emphasized in recent dietary guidelines are the recommendations to consume a wide variety of foods and to eat plenty of fruits and vegetables (Asian Nutrition Forum, 1997; Ogle *et al.*, 2001a). An adequate micronutrient intake in high-risk population groups such as women of childbearing ages and young children is more easily achieved if the diet includes foods of both plant and animal origin. Such diets have higher bioavailability for iron and vitamin A. Even small amounts of animal products have significant enhancing effects on the nutrient uptake from the overall diet (Gibson, 1990; Ogle *et al.*, 2001b; Ogle *et al.*, 2001c). In Vietnam, the work of the National Institute of Nutrition on food-based strategies has promoted production of a variety of foods through emphasis on integrated garden-fish pond-small livestock systems called VAC (Ogle, 2001). Additionally, Vietnam has a strong tradition of using local, wild plants as vegetables and many of these continue to be used for nutritional and medical reasons. These traditions are important foundations that can indicate the potential for improving micronutrient nutrition through successful communication strategies.

Over the years many approaches have been used in communication for behavioral changes in nutrition. Information-education-communication (IEC) or public nutrition education has been most common, both built heavily on top-down and didactic approaches. Increasingly, methods that build more on experiences from social marketing and participation of

the intended risk groups have become popular and these have shown to lead to more lasting changes (Parlato, 1992; Smitasiri *et al.*, 1992).

The overall aim of this study is to provide practical insights into how participatory, audience-centered communication activities can be effectively used for imparting information and for behavioral change promotion on the topic of dietary diversity and micronutrient nutrition among reproductive-age women in Vietnam. The communication initiatives for improving nutrition knowledge and practices of the women in two selected communes (Dongky and Donglac, Yenthe District in Bacgiang province) were carried out from January, 2003 to December, 2005.

## METHODS

### Study design

After conducting the baseline survey, Dongky commune was selected for the intervention commune and Donglac commune as the control. In the control commune, activities under the normal National Protein-Energy Malnutrition (PEM) Control Programme (such as nutrition education and growth monitoring) were carried out as usual. In the intervention commune (Dongky), the following activities were implemented:

- Workshops (multi-sectoral) at district and commune levels were held to define problems and strategies of nutrition communication and education toward improving nutrition knowledge and food intake practices among young children and reproductive aged women.
- Short training courses on development of "Nutrition Squares" were organized for multi-sectoral staff/workers (including health workers, nutrition collaborators, teachers at primary schools, members of farmer's union and women union).

- Providing equipment and materials: weighing scales, measuring boards, IEC materials and some seeds of iron-rich vegetables and fruits: *rau day* (jute potherb), *rau gien* (amaranth), *mong toi* (vina spinach), *rau ngot* (sauropus); and gourd, papaya seeds. Nutrition information was provided 2 times/week by the commune health center.
- A contest was held in a primary school on nutrition knowledge, singing songs on nutrition, role-plays and competition in drawing foods and food groups.

#### *Competition between nutrition collaborators*

- Developing "Nutrition Square": a small garden planted with a variety of vegetables and fruit trees at the commune health center and kindergartens.
- Develop nutrition squares in homes of the nutrition collaborator's families, households with children below 5 years, and those with reproductive-age women.
- Organizing a nutrition contest among the nutrition collaborators on preparing cheap and nutritious meals, nutrition knowledge and developing good nutrition squares.

Close supervising and monitoring of all activities of the intervention was conducted by the staff of the National Institute of Nutrition, Hanoi.

#### **Baseline and final survey in the two selected communes**

##### *Subjects*

The respondents were reproductive-aged women (20-35 years old) who were randomly selected.

##### *Data collection*

Data were collected using formal interviews, observations, dietary assess-

ment; and assessment of nutrition knowledge, attitude and practices (KAP) among the women.

##### ■ *Interview and observation*

Data on socioeconomic status (income per capita per month, occupation and formal education), environmental sanitation of the household, and the nutrition Knowledge -Attitude-Practices of the women was obtained. Some environmental data and household stuffs were collected through observations.

##### ■ *Dietary assessment*

Frequency of food consumption of the women was obtained by using a food frequency questionnaire (Gibson, 1990; WHO, 2001). Food intake of women was also collected using 24-hour recall method for one day.

##### *Data analysis*

Data analysis was carried out by using the Statistical Package for Social Sciences (SPSS PC, Norusis, 1990; and SPSS version 10.5 for Windows).

Food intake of women was assessed using a software for food analysis based on the food composition table of Vietnam (MOH, 2000). The KS test was performed to determine the normal distribution of variables. The Student's T-test was used for the comparison of the means of 2 groups. The difference in prevalence data between groups was tested by Chi-square test. The non-parametric tests were used for variables that were not normally distributed. Analysis of collected data was carried out in the computer unit of the NIN, Vietnam.

## **RESULTS**

### **General information of the surveyed households at the baseline survey**

The Dongky and Donglac communes are located in a mountainous area with

different minority ethnic groups: Kinh, Tay, Nung, Cao lan. At the beginning of the study, the percentage of poor households in the Donglac and Dongky communes was quite similar, as determined to be 14.1% and 15.8% respectively, based on criteria set for Vietnam.

The number of children in a household of both communes ranged from 1 to 4 children with a median value of 2. The mean family size was similar for both communes (4.3 in Donglac and 4.2 in Dongky). As shown in Table 1, the yearly income was similar for both communes: Dongky (intervention commune) was 1,445,000 VND and Donglac (control commune) was 1,405,000 VND. At baseline survey, there was not much difference between the family size, number of children in the household and age of the women in the two communes.

#### *Formal education of the women*

The formal educational status of the women is presented in Table 2. The survey showed that the percentage of illiterate women was very low in the 2 communes (1% in Dongky and 2% in Donglac). Most of the women interviewed finished secondary school (61.3% in Dongky and 57.1% in Donglac).

#### *Occupation of the households*

The findings of the survey indicate that most of the women in the 2 communes were farmers (about 84.7% in Dongky and 78.6% in Donglac); and the percentage of the households which had other jobs was very low in both communes (Table 3).

**Table 1.** General characteristics of the households at baseline survey

<i>Characteristics</i>	<i>Dongky (n=98)</i>	<i>Donglac (n=98)</i>
Number of children in the household	1.7	1.9
Family size	4.2	4.3
Age of women (y)	27.8	28.1
Average income/y (1000 VND)	1,445	1,405

**Table 2.** Formal education of the women at baseline survey (years of schooling) (%)

<i>Education level</i>	<i>Dongky (n=98)</i>	<i>Donglac (98)</i>
< 3 years	2.0	1.0
Primary school	22.4	14.3
Secondary school	61.3	57.1
≥ High school	14.3	27.6

**Table 3.** Main Occupation of the women at baseline survey (%)

<i>Occupation</i>	<i>Dongky (n=98)</i>	<i>Donglac (n=98)</i>
Farmers	84.7	78.6
Animal Husbandry	13.3	16.3
Other occupations	2.0	5.1

**Table 4.** Source of drinking water at baseline survey (%)

Source of drinking water	Dongky (n=98)	Donglac(n=98)
Cemented well	89.8	86.7
UNICEF bored well	4.1	9.2
Others	6.1	4.1

**Table 5.** Frequency of food consumption (daily + weekly) of the women at baseline and final surveys in the Dongky and Donglac communes (%)

Food items	Dongky		Donglac	
	Baseline (n= 98)	Final (n= 99)	Baseline (n= 98)	Final (n= 97)
Rice	100	100	100	100
Other cereals	22.4	54.5	51.0	43.3
Meats	78.0	95.9	63.3	91.7
Fish	12.2	40.4	15.3	36.1
Shrimp, crab	32.6	41.4	35.7	45.3
Eggs	53.1	81.8	51.0	80.4
Beans	10.2	21.2	20.4	11.3
Sesame/peanuts	40.8	49.5	63.3	63.9
Tofu	79.6	94.9	68.4	83.5
Sauropus	26.5	86.9	35.7	78.3
Amaranth*	20.4	55.6	18.4	37.1
Jute potherb**	14.3	64.6	11.2	22.7
Vine spinach*	16.3	50.5	8.2	37.1
Sweet potato leaves	28.6	41.4	15.3	37.1
Water spinach	24.5	86.9	45.9	85.6
Mustard	18.4	52.5	16.3	48.4
Ripe Fruits	16.3	63.6	27.6	51.5

\*P<0.05; \*\*P< 0.01- Chi-Square Test: Significant difference between 2 communes at final survey

Most of the households in the two communes used water from cemented wells as source of drinking water (Table 4).

#### **Comparison of the results of the final survey with the baseline survey**

##### *Food consumption of reproductive-age women*

The frequency of food consumption data of the women at baseline and final

surveys of the 2 communes are presented in Table 5. The findings of the surveys showed that the food consumption of the women in both communes was improved compared to the data of the baseline survey. The women in both communes consumed more frequently fish, shrimp, eggs and some kinds of vegetables.

In comparing food consumption between the women in the final survey between the two communes (Table 5), it

**Table 6.** Average food consumption (g/cap/day) of the surveyed women

Kind of Foods	Dongky		Donglac	
	Baseline Survey (n=98)	Final Survey (n=99)	Baseline Survey (n=98)	Final Survey (n=97)
Rice	406.7 ± 67.3	409.3 ± 63.2	378.5 ± 78.1	406.6 ± 43.3
Other staple foods	27.1 ± 16.1	16.3 ± 18.9	51.2 ± 39.0	25.5 ± 31.7
Beans	2.6 ± 1.6	1.8 ± 3.4	3.9 ± 2.3	0.9 ± 4.5
Tofu**	24.9 ± 15.6	64.3 ± 12.8	3.0 ± 5.6	23.5 ± 9.8
Peanuts, sesame	2.3 ± 2.6	13.1 ± 3.8	2.61 ± 2.3	9.6 ± 4.8
Sugar	2.4 ± 4.7	11.2 ± 5.1	4.0 ± 5.9	12.8 ± 4.7
Fat, oils*	3.8 ± 2.3	13.4 ± 8.7	3.5 ± 1.5	9.3 ± 7.9
Meats	90.3 ± 34.2	64.4 ± 35.2	105.6 ± 35.7	69.4 ± 37.9
Eggs, milk*	12.1 ± 9.8	19.9 ± 11.2	10.2 ± 2.7	13.6 ± 9.2
Fish	2.5 ± 4.3	35.2 ± 11.8	3.9 ± 2.1	28.3 ± 9.7
Vegetables**	294.6 ± 35.6	299.2 ± 92.5	274.5 ± 47.8	211.3 ± 77.4
Ripe fruits	32.6 ± 21.8	47.1 ± 31.2	41.3 ± 36.7	50.4 ± 37.5

\*P<0.05; \*\*P< 0.01- Chi-Square Test: Significant difference between 2 communes at final survey

**Table 7.** Average energy intake of the women 20-35 y old in the 2 communes in Bac giang province at the baseline and final surveys

Energy Intake	Dongky		Donglac	
	Baseline (n=98)	Final (n=99)	Baseline (n=98)	Final (n=97)
Total Energy intake (kcal)	1875	2052	1929	2034
% Energy provided by protein	12.9	14.7	13.3	15.3
% Energy provided by fat	9.1	9.4	10.1	8.5
% Energy provided by carbohydrate	78.0	75.9	76.6	76.2

was found that the women in the Dongky commune consumed more frequently vegetables particularly Amaranth, Jute potherb, Vine spinach (these are iron-rich vegetables whose seeds were provided through the Project activities).

The changes in average food intakes of the women in the two communes at baseline and at final surveys are shown in Table 6 while Table 7 shows the changes in energy intake. The findings showed that

the average consumptions of tofu, peanuts, sesame, fat oils and fish of the women in both communes were increased in the final survey. However meat consumption decreased, and this could be due to the outbreak of chicken flu during 2004-2005 in these communes. The consumption of tofu and vegetables in the final survey of the Dongky commune was significantly higher than that in the Donglac commune (Table 6). The energy

and protein intakes of the women were increased, but there is no significant difference between the two communes.

The results on nutrition knowledge and practices scores of the women at baseline and final surveys are presented in Table 8. It was found that the total knowledge scores of the women in the final surveys in both communes had increased particularly in the Dongky commune. The total knowledge scores of the women in the Dongky commune significantly improved compared to baseline data and was higher compared to that of the Donglac commune. The total nutrition practices scores of the women increased compared to the baseline data; however, it was not significantly different between the two communes.

The result on change in nutrition knowledge after 2 years of intervention is shown in Table 9. It was found that all women at baseline had very poor nutrition knowledge, but after intervention, the knowledge of the women in both communes had improved. The percentage of women with poor scores for nutrition knowledge in the Dongky commune was significantly lower (only 2.1%) compared to that in the Donglac commune (59.8%). The women in the Dongky commune who received very intensive nutrition education had better nutrition knowledge. The difference in the percentage of the women with good knowledge between the intervention commune (Dongky) was significantly higher compared to that in the control commune (Donglac).

**Table 8.** Average scores<sup>a</sup> for KAP (mean ± SD) of women at baseline and final surveys

Commune	Dongky		Donglac	
	Baseline (n=98)	Final (n=99)	Baseline (n=98)	Final (n=97)
Total score for knowledge	29.8 ±22.7	76.4 ±8.2*	30.7 ±22.3	41.9 ±13.9
Total score for attitude	68.2 ±20.8	67.9 ±14.1	69.6 ±17.9	60.4 ±13.6
Total score for practices	53.6 ±19.1	81.3 ±14.3	61.6 ±14.8	74.0 ±14.1

<sup>a</sup>Total scores =100; \* P<0.05- T-test: significant difference between 2 communes at final survey

**Table 9.** Nutrition knowledge scores of the women at baseline and final surveys (%)

Knowledge Scores (Total scores = 100)	Dongky		Donglac	
	Baseline (n=98)	Final (n=99)	Baseline (n=98)	Final (n=97)
< 50 scores	78.6	2.1**	79.6	59.8
50-74.9 scores	20.4	35.3	16.3	38.1
≥ 75 scores	1.0	62.6**	4.1	2.1

\*\* P<0.01- T-test: significant difference between 2 communes at final survey

**Table 10.** Change in attitude to nutrition and prevention of anemia among the women at baseline and final surveys (%)

<i>Attitude Scores</i>	<i>Dongky</i>		<i>Donglac</i>	
	<i>Baseline (n=98)</i>	<i>Final (n=99)</i>	<i>Baseline (n=98)</i>	<i>Final (n=97)</i>
< 50 scores	13.3	8.1	15.3	17.5
50-74.9 scores	55.1	63.6	35.7	70.1
≥ 75 scores	31.6	27.3	49.0	13.4

**Table 11.** Nutrition practices of the women at baseline and final surveys (%)

<i>Practices Scores</i>	<i>Dongky</i>		<i>Donglac</i>	
	<i>Baseline (n=98)</i>	<i>Final (n=99)</i>	<i>Baseline (n=98)</i>	<i>Final (n=97)</i>
< 50 scores	36.7	0	42.8	3.1
50-74.9 scores	39.8	37.4	38.8	46.4
≥ 75 scores	23.5	62.6	18.4	50.5

The results of the study showed that the attitude to nutrition and prevention of anemia of the women in the selected communes were not clearly changed (Table 10).

The nutrition practices scores at baseline and final surveys are presented in Table 11. It was found that the percentage of the women with improper nutrition practices in both the communes at final survey decreased compared to those at baseline. None of the Dongky commune women had practices score below 50 at final survey; and the percentage of the women who had the appropriate nutrition practices was significantly increased from 23.5% to 62.6%.

## CONCLUSIONS

The food consumptions of the women in both communes were improved comparing to those at the baseline survey, espe-

cially in the Dongky commune (intervention commune): The women of the Dongky commune consumed more frequently vegetables particularly amaranth, jute potherb, vine spinach compared to those in control commune.

The total knowledge scores of the women at final surveys in both communes were increased particularly in the intervention commune (Dongky). The total knowledge scores of the women in the Dongky commune significantly improved compared to baseline data and were higher compared to that of the control commune.

The percentage of women who have poor knowledge (below 50 scores) in the Dongky commune (who received the intensive nutrition education) was significantly lower (only 2.1%) compared to that of the Donglac commune (59.8%). The percentage of women with good nutrition knowledge in the Dongky commune (>75

scores) was also significantly higher compared to that in the Donglac commune.

The nutrition practices among the women in Dongky were better compared to the control one. The women with improper practices were significantly decreased compared to those of the baseline data (none of the Dongky women had the practices scores <50 at final survey); and the percentage of the women who had the appropriate nutrition practices in the Dongky commune was also significantly increased from 23.5% to 62.6%.

## REFERENCES

- Asian Nutrition Forum (1997). Development of Food Based Dietary Guidelines for the Asian Region. Final report of the recommendations of the Asian Nutrition Forum/WHO Symposium on diet related chronic diseases in Asia. Indian International Centre, 10-14 February, 1997, New Delhi, India.
- FAO/ILSI (1997). Preventing Micro-nutrient Malnutrition: A Guide to Food Based Approaches. ILSI Press, Washington DC, USA.
- Gibson R (1990). Principles for Nutritional Assessment. New York, Oxford, Oxford University Press
- MOH (2001). National Nutrition Strategy. Period 2001-2010. Ministry of Health, Vietnam. Medical Publisher, Hanoi.
- Ogle BM (2001). Wild vegetables and micronutrient nutrition: Studies on the significance of wild vegetables in women's diets in Vietnam. Uppsala University Dissertation Series Uppsala University Printers, Uppsala Sweden (accessed 12 Nov 2007. (<http://publications.uu.se/abstract.xsql?dbid=694> )
- Ogle BM, Ha Thi Anh Dao, Mulokozi G, Hambraeus L (2001a). Micronutrient composition and nutritional importance of gathered vegetables in Vietnam. *Intl J Fd Sci Nutr* 52:485-499.
- Ogle BM, Johansson M, Ho Thi Tuyet and Johanneson L (2001b). Evaluating the significance of dietary folate from wild vegetables in Vietnam. *Asia Pac J Clin Nutr* 10 (3):216-221.
- Ogle BM, Pham Huang Hung and Ho Thi Tuyet (2001c). The significance of wild vegetables in micronutrient intakes of women in Vietnam. An analysis of food variety. *Asia Pac J Clin Nutr* 10:21-30.
- Parlato R (1992). Vitamin A social marketing: a programme guide. Academy for Educational Development. USA.
- Smitasiri S, Attig G & Dhanamitta S (1992). Participatory action for nutrition education: social marketing vitamin A-rich foods in Thailand. *Ecol Food Nutr* 28:199-210.
- WHO (2001). Evaluation in health promotion: principles and perspectives (Edited by Irving Rootman, Michael Goodstadt, Brian Hyndman, David V. McQueen, Louise Potvin, Jane Springett & Erio Ziglio, WHO Regional Publications, European Series, No. 92, 533 pages, ISBN 92 890 1359 1 WHO Regional Publications, European Series 92, WHO/CDC. Copenhagen.