

AN OUTCOME BASED NUTRITION CURRICULUM FOR COUNSELORS AT HIV VOLUNTARY COUNSELING AND TESTING FACILITIES IN VIETNAM

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Abstract. We developed, monitored and evaluated an outcome based nutrition curriculum for counselors at HIV voluntary counseling and testing (VCT) facilities in Can Tho City, Vietnam. This outcome based education (OBE) focused on expected competencies appropriate to the local context. The curriculum was designed to train 37 counselors working in HIV VCT centers in Can Tho City, Vietnam regarding nutrition. Lectures and learning activities were developed and assessment criteria were determined. The curriculum content was evaluated and modified by feedback from reviewers. During training, the HIV VCT counselors gave the curriculum a satisfactory rating. More than 80% of HIV VCT counselors stated the subject matter was easily or very easily understand. Testing revealed a significant mean increase in the HIV VCT counselor's competency by the end of training ($p=0.001$). More than 89% of HIV VCT counselors felt confident in performing nutritional counseling. These findings suggest the usefulness of this OBE nutrition curriculum for training HIV VCT counselors.

Keywords: outcome based nutrition curriculum, outcome based education, local context, HIV VCT counselors, learning outcomes, competency, Vietnam

INTRODUCTION

In 2003, the Vietnamese Government strengthened HIV/AIDS prevention and control by declaring a "National Strategy on HIV/AIDS for 2004-2010 with a Vision to 2020" in which HIV voluntary counseling and testing (VCT) was an important component; the HIV VCT included integration of nutritional counseling into

"post-test counseling" following seropositive status (Vietnamese Government, 2003). This provides HIV prevention, care, support and especially treatment, including early initiation of antiretroviral treatment (ART) for people living with HIV/AIDS (PLWHA) with a CD4 count ≤ 350 cells/mm³ (Duc *et al*, 2012). Nutritional counseling was considered a culturally and economically viable method to change dietary behavior and improve the effectiveness of AIDS treatment among people with limited access to antiretroviral therapy (Tabi and Vogel, 2006), particularly when provided early, it is effective in improving body weight in PLWHA

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(Chlebowski *et al*, 1995; Van Niekerk *et al*, 2000). A barrier to the integration of nutritional counseling into HIV VCT facilities was a limitation in the counselor's competency in nutritional counseling due to insufficient pre-service education (Vietnamese Ministry of Health, 2010). A solution for this is capacity building of human resources. Among curriculum designs, an outcome based curriculum is favorable for upgrading skills and changing them into practice because it focuses on competency in matters relevant to their work, aims at aligning education with the demands of the workplace, and is relevant of training for the work site (Spady, 1995). However, the concept of aligning education with the demand of the workplace may be extended further. The nutrition curriculum needs to align education with HIV/AIDS policies, existing HIV VCT counselors' competencies before training and the HIV client's nutritional concerns, in order to insure the acceptance and support of health authorities, learners' satisfaction, comprehension of training content, and increased likelihood of the HIV client modifying their dietary behavior. Thus, the OBE nutrition curriculum in this study focused on competency and aimed at aligning education with the local context. The purpose of this study was to describe the process of this outcome based nutrition curriculum development and monitor and evaluate curriculum implementation progress.

MATERIALS AND METHODS

The curriculum design used the Outcome Based Education (OBE) model in which a desired outcome is selected first, and then the curriculum content, lectures, learning activities and assessments are developed to support the intended outcome

(Spady, 1998). We started by describing the job of nutritional counseling, listing and analyzing the related tasks. Task analysis showed the sub-competencies HIV VCT counselors needed to perform. Grouping relevant sub-competencies created the main expected competencies, for which training modules were created. The components of the training modules, such as lectures, learning activities and assessments, were derived from the learning needs, which were determined by matching each expected competency with each component. Thus, each unit in the training module aimed attempted to meet the expected competency within the local context.

Qualitative and quantitative approaches were applied for monitoring and evaluation of curriculum implementation progress.

Population sample and research process

All thirty-seven HIV VCT counselors working in Can Tho City participated voluntarily in the study.

Before initiation of the study, the coordinator's committee, including the heads of the City Health Department, District Health Centers and HIV/AIDS Prevention and Control Center reached a consensus about the development of a nutritional curriculum for training HIV VCT counselors. A technical working group (TWG), including specialists in health education, nutrition, HIV/AIDS and pediatrics, was formed to develop the curriculum, monitor, and evaluate the curriculum implementation progress. The study consisted of three stages. The first stage involved situation analysis, including analysis of nutritional counseling tasks, HIV/AIDS policies, demands of HIV VCT facilities, existing nutritional counseling competency of HIV VCT

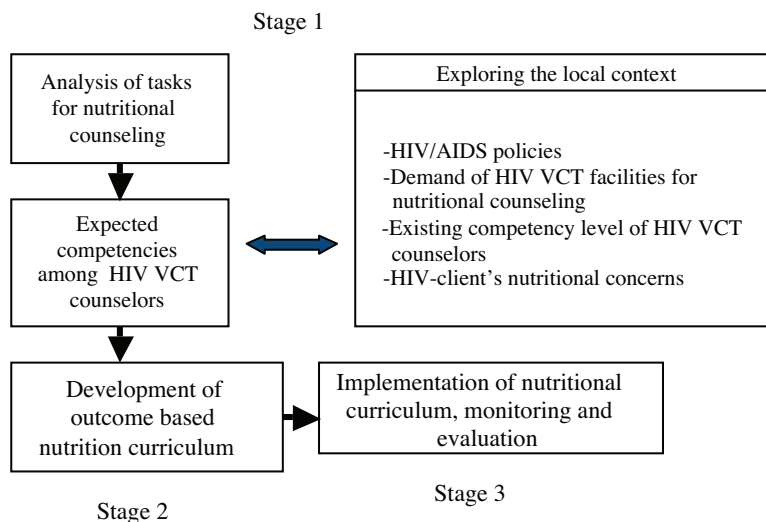


Fig 1-Diagram of study process.

counselors and HIV-client’s nutritional concerns. The second stage consisted of development of the nutrition curriculum with drafting, reviewing, evaluating and refining. The third stage consisted of curriculum implementation, monitoring and evaluation (M&E). The study process is illustrated in Fig 1.

Data collection

Rating scores based on perceived level of agreement in achievement of 17 benchmarks were given by 10 external and internal reviewers who were representatives of the coordinator’s committee, TWG, HIV VCT counselors and specialists in health education and nutrition. They used a 3-point Likert scale as follows: 1, no agreement; 2, partial agreement; 3, complete agreement.

HIV VCT counselors rated eight aspects of the training process with a 4-point Likert scale as follows: 1, very unsatisfactory; 2, unsatisfactory; 3, satisfactory; and 4, very satisfactory.

HIV VCT counselors rated the nutritional curriculum as: very easy, easy, difficult or very difficult which meant: un-

derstanding more than two-thirds the content of each unit, understanding more than half but less than or equal to two-thirds the content, understanding more than one-quarter but less than or equal to half the content and understanding less than or equal to one-quarter the content, respectively of each of the 8 key items of the nutrition curriculum.

An individual self-administered questionnaire

was used to measure the HIV VCT counselors’ pre-test and post-test competencies in nutritional counseling. A total possible score was 49 points, which was categorized into three levels: excellent competency (39-49 points), average competency (29-38 points) and low competency (0-28 points).

An individual self-administered questionnaire was used to assess the HIV VCT counselor’s confidence in performing real nutritional counseling. The total score was 39 points which was categorized into 2 levels: confident (from 24-39 points) and not confident (0-23 points).

Analysis

The HIV VCT counselor’s competency was measured by comparing pre- and post-test scores. Significance was set at $p < 0.05$. The content validity of the competency-measuring questionnaire was assessed by a systematic review by a panel of experts in nutrition and health education. Its internal consistency was measured with a Cronbach’s alpha coefficient, which was 0.8483 (> 0.7). The other indicators during curriculum evaluation

were mainly descriptive. Qualitative analysis of responses to open-ended questions was used to detect the HIV VCT counselor's competency and the HIV-client's nutritional concerns. Investigator triangulation confirmed the findings.

Ethical approval for this study was received from the Ethics Committee for Human Research, Faculty of Public Health, Mahidol University, Bangkok, Thailand.

RESULTS

Situation analysis

The legal framework of the project included "The National Strategy on HIV/AIDS Prevention and Control in Vietnam till 2010 with a vision to 2020" to support the integration of nutrition counseling and other primary care into the activities of HIV VCT facilities. It also included the "Guideline on HIV/AIDS diagnosis and treatment" and the "Guideline on coordination among diagnosis, treatment, and management of tuberculosis/HIV-infected patients" governing HIV/AIDS and tuberculosis diagnosis and treatment through introducing therapies and drugs in the treatment protocols. The framework also included the "Guideline on prevention of mother to child HIV-transmission-PMTCT" which recommended selecting between two choices: utilization of replacement feedings or safe breast-feeding for infants less than 6 months; this suggested HIV/AIDS care and treatment to be given by pediatric and obstetric specialists.

The curriculum content, including food-drug interactions, needed to be consistent with the above framework. For pregnant or lactating women with HIV/AIDS, the curriculum only provided HIV VCT counselors with information on nutrition during pregnancy, safe breast-

feeding, replacement feedings and risks for mother-to-child HIV-transmission with breast-feeding.

HIV VCT responsibilities included pre- and post-test counseling, anti-retroviral (ARV) treatment, counseling to prevent mother-to-child HIV-transmission (PMTCT), treatment of tuberculosis (TB) and opportunistic infections (OI). Equipment used at HIV VCT facilities included weighing scales and laboratory HIV test kits.

The coordinator committee determined a need for counseling as follows: 1) Emphasis solving nutritional problems using methods appropriate for individual counseling (Katharine and Amy, 1998); 2) nutritional counseling using only available resources at HIV VCT facilities; and 3) having a target audience for nutritional counseling of HIV-infected adults, excluding HIV-infected pregnant women, and their children because their care occurred at hospitals.

An in-depth interview was conducted to explore dietary patterns, food safety and HIV-symptoms affecting nutrition. These interviews revealed the following: 1) healthy food should be convenient, economical, easily available, culturally acceptable and taste good; 2) instructions should include selection of healthy cooking oils and how to use those oils to obtain healthy benefits; 3) food safety instructions should be appropriate for the living conditions of the HIV clients; and 4) nutritional instructions should be contextually appropriate for health problems, such as wasting diarrhea, anorexia, nausea, vomiting, fever, anemia and constipation.

Through interviews it was discovered the HIV VCT counselors were unable to assess nutritional status or plan

meals. They were unable to recommend foods based on energy requirements for PLWHA. They were also unable to advise clients regarding nutritional management of symptoms, food safety, or food – drug interactions. They did not know the process of problem-solving counseling but were familiar with some stages, such as “address agenda” and “arrange follow-up visits”. They were able to encourage, summarize, give appropriate non-verbal communication and give illustrations.

Analysis of each stage of nutritional counseling problem-solving resulted in determining expected sub-competencies, which when generalized resulted in five main expected competencies (Fig 2).

We were then able to take the expected competencies and apply them within the local context to create a list of learning needs (Fig 3).

Development of nutritional curriculum

The five main expected competencies become an outcome goal of the training program. After completing the training course, learners were expected to correctly perform problem-solving nutritional counseling for PLWHA, leading to the construction of a meal plan and menu based on their awareness of the nutritional problems and their own nutritional decisions.

We developed unit content based on the learning needs for each module; this became the draft or original curriculum. After review and refinement, the curriculum was formed into 5 modules comprised of 17 units (Table 1). Scores were given by reviewers for achieving benchmarks (Table 2).

Monitoring and evaluation of curriculum implementation progress

Table 3 shows the satisfaction scores of the participants with the course.

Eighty-three point eight percent (31/37) of the participants were satisfied with the lectures and 70.3% (26/37) with the learning activities.

More than 80% of participants stated they could easily or very easily understand the course content except for the dietary assessment unit, where only 51.3% of participants could easily or very easily understand that unit (Table 4).

After the training course, the participants scored significantly in nutritional counseling competency ($p=0.001$). Thirty-two point four percent, 67.6% and 0% of participants had excellent, average, and low competency scores, respectively. Eighty-nine point two percent of participants had improved confidence in providing nutritional counseling (Table 5).

DISCUSSION

The nutritional curriculum modules were arranged in a logical sequence. The first 4 modules include 1) “Application of nutrition in constructing healthy menus”, 2) “Nutrition assessment”, 3) “Nutrition care for pregnant and lactating HIV- women, infants and children born to HIV- positive mothers”, and (4) “Nutritional management of HIV/AIDS-related symptoms, drug-food interactions, food safety and personal hygiene”. They mainly provided necessary nutritional knowledge and skills to identify nutritional problems, assist the client in constructing a meal plan, suggesting physical activity, and giving specific nutritional instructions for HIV infected pregnant women, mothers and their children.

The last module of the program helped learners apply their nutritional knowledge and counseling skills in nutrition counseling. Individualized counseling with problem-solving is more

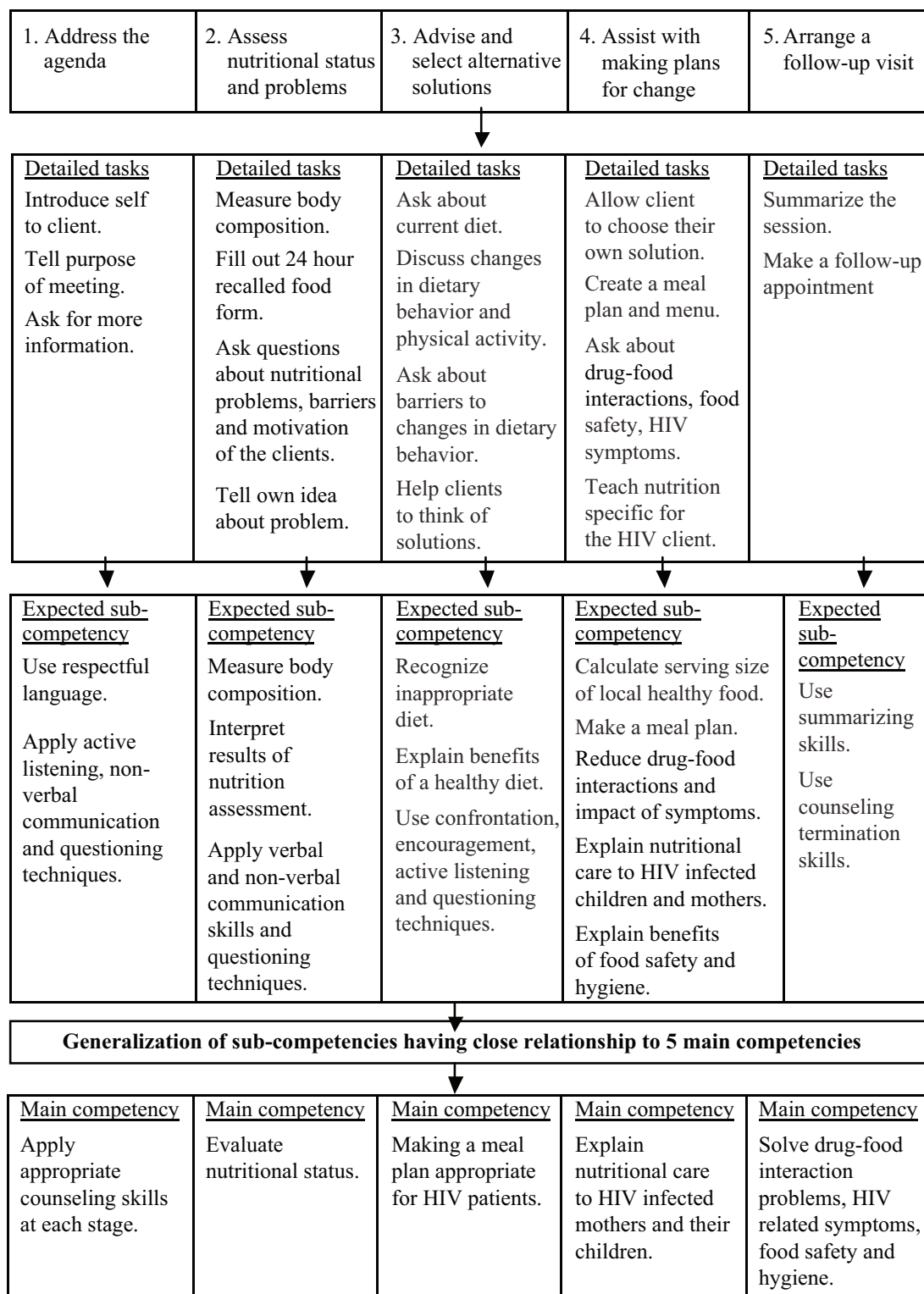


Fig 2–Stages of problem-solving nutritional counseling.

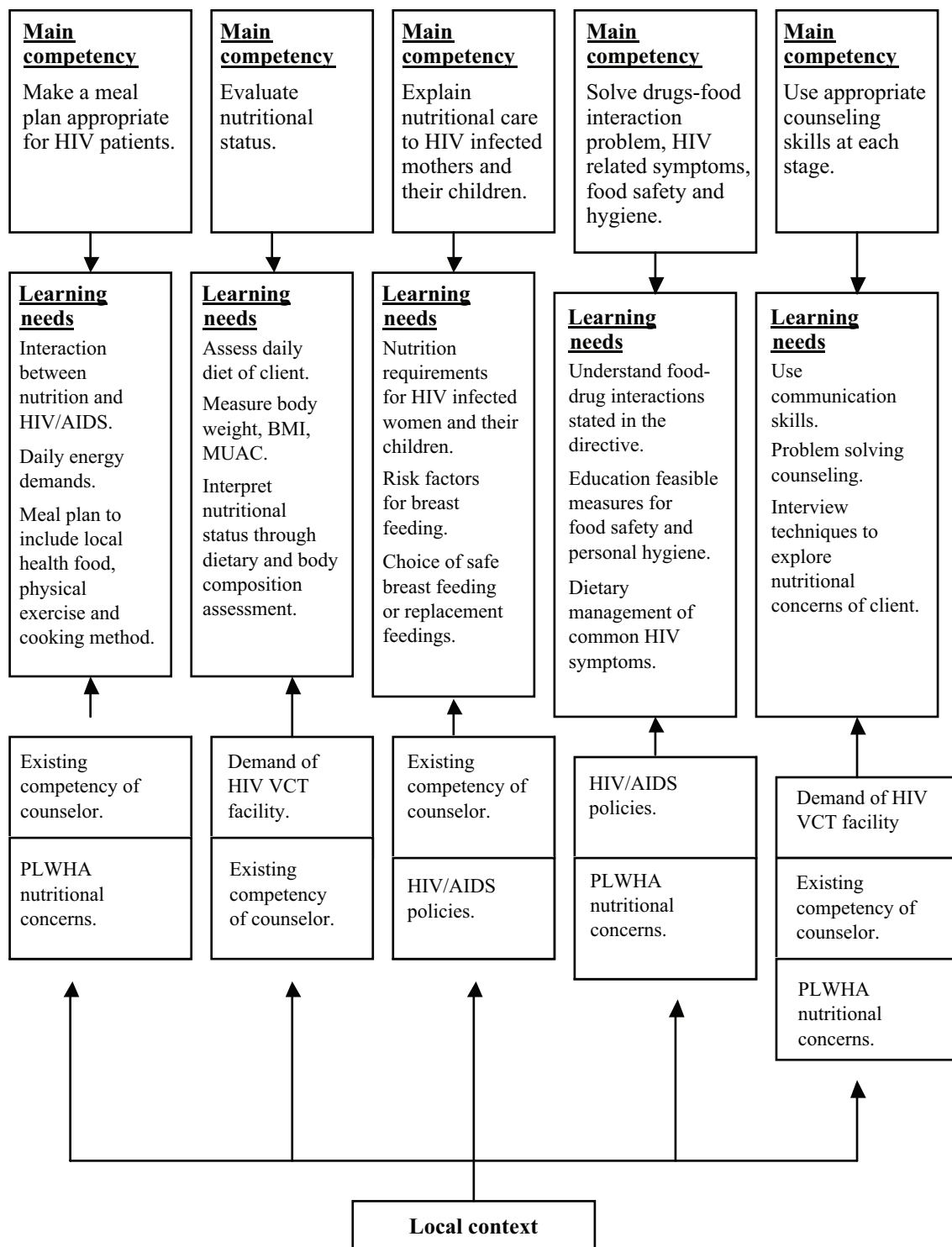


Fig 3–Determination of learning needs.

Table 1
The outline of outcome-based nutrition curriculum.

| Outline of modules | Specific objective | Assessment criteria | Time(hours) |
|---|---|---|-------------|
| Module 1: Application of nutrition in constructing healthy menus. | Construct healthy menus for HIV-client in terms of nutrient needs. | Develop a healthy menu appropriate for the nutritional requirements of the client using locally available and accessible food sources. | 6/module |
| Unit 1.1: Relationship between nutrition and HIV/AIDS. | | | 1 |
| Unit 1.2: Nutritional requirement for PLWHA. | | | 2 |
| Unit 1.3: Food security. | | | 1 |
| Unit 1.4: Meal plan. | | | 2 |
| Module 2: Nutrition assessment. | Determine the nutritional status of clients and causes of dietary behavior and food choices. | Assessment data are accurate and documented in accordance with guidelines. | 3/module |
| Unit 2.1: Dietary assessment. | | | 1.5 |
| Unit 2.2: Anthropometry assessment (BMI, MUAC). | | | 1.5 |
| Module 3: Nutritional care for pregnant and lactating HIV infected women, infants and children born to HIV positive mothers. | Recommend use of macro- and micro-nutrients for HIV infected pregnant and lactating women. Advise HIV infected mother about feeding infant. Instruct client in nutritional care to prevent wasting and to manage nutritional deficiencies in HIV infected children. | Information should be suitable for the HIVclient according to the standard protocols for nutritional care and support of PLWHA. | 5/module |
| Unit 3.1: Nutritional care for HIV-pregnant and lactating women. | | | 2.0 |
| Unit 3.2: Nutritional care for infant born to HIV infected mother. | | | 1.5 |
| Unit 3.3: Nutritional care for children with HIV. | | | 1.5 |
| Module 4: Nutritional management of symptoms, drug-food interactions, food safety and hygiene. | Determine symptoms and give nutritional advice about coping with those symptoms. Determine common drug-food interactions, and select appropriate dietary responses. Instruct client in how to prevent the infection from food, water, home environment and body. | Symptoms and nutrition related side effects are accurately identified and managed in accordance with standard guidelines. Information about food safety and personal hygiene is accurate following the training manual. | 6/module |
| Unit 4.1: Nutritional management of symptoms. | | | 2 |
| Unit 4.2: Nutritional issues with ARV drugs. | | | 2 |
| Unit 4.3: Food safety and personal hygiene. | | | 2 |
| Module 5: Problem-solving nutrition counseling. | Use suitable non-verbal and verbal communication skills during client-centered counseling. | Correct nutritional counseling is performed within a set time and the process is verified by a nutritional counseling checklist. | 9/module |
| Unit 1: Patient-centered counseling model. | | | 2 |
| Unit 2: Communication skills. | | | 2 |
| Unit 3: Questioning techniques. | | | 1 |
| Unit 4: Interview model. | | | 2 |
| Unit 5: Nutritional counseling procedure. | 2 | | |

Table 2
Evaluation of nutrition curriculum by reviewer ratings (n=10).

| Benchmarks | Frequency on the original curriculum | | | Mean ± SD | Frequency on the corrected curriculum | | | Mean ± SD |
|--|--------------------------------------|---|---|-------------|---------------------------------------|---|---|------------|
| | 1 | 2 | 3 | | 1 | 2 | 3 | |
| | Design | | | | | | | |
| 1. Practice time offered opportunities for application to real work. | 3 | 5 | 2 | 1.9 ± 0.74 | 2 | 4 | 4 | 2.2 ± 0.79 |
| 2. Content was appropriate to the situation at VCT sites. | 1 | 4 | 5 | 2.3 ± 0.67 | 0 | 4 | 6 | 2.6 ± 0.52 |
| 3. Content adaptable to policy framework. | 0 | 4 | 6 | 2.6 ± 0.52 | 0 | 3 | 7 | 2.7 ± 0.48 |
| 4. Content was accurate and scientifically sound. | 2 | 4 | 4 | 2.2 ± 0.79 | 1 | 3 | 6 | 2.5 ± 0.70 |
| 5. Content relevant to learning objective of unit. | 1 | 4 | 5 | 2.3 ± 0.67 | 0 | 3 | 7 | 2.7 ± 0.48 |
| 6. The sequence of information within each unit was logical and well-organized. | 2 | 4 | 4 | 2.2 ± 0.79 | 1 | 3 | 6 | 2.5 ± 0.70 |
| 7. Learning objectives were clearly defined. | 1 | 3 | 6 | 2.5 ± 0.70 | 0 | 2 | 8 | 2.8 ± 0.42 |
| 8. Unit content was relevant to the learning objective. | 1 | 4 | 5 | 2.3 ± 0.67 | 0 | 2 | 8 | 2.8 ± 0.42 |
| 9. Arrangement of the content was logical and well organized. | 2 | 4 | 4 | 2.2 ± 0.79 | 0 | 3 | 7 | 2.7 ± 0.48 |
| 10. Discussion topics and case studies were presented clearly. | 1 | 3 | 6 | 2.5 ± 0.70 | 0 | 1 | 9 | 2.9 ± 0.32 |
| 11. The amount of information presented in the lectures was appropriate. | 2 | 4 | 4 | 2.2 ± 0.79 | 1 | 3 | 6 | 2.5 ± 0.70 |
| 12. Curriculum content helped achieve the program outcome. | 1 | 4 | 5 | 2.3 ± 0.67 | 0 | 3 | 7 | 2.7 ± 0.48 |
| Learning methodology and assessment | | | | | | | | |
| 13. Case studies and role playing exercises helped learners apply new material in a simulating setting. | 2 | 4 | 4 | 2.2 ± 0.79 | 1 | 3 | 6 | 2.5 ± 0.70 |
| 14. Assessment criteria for learners was relatively accurate in measuring the level of achievement for unit learning objectives. | 3 | 4 | 3 | 2.0 ± 0.81 | 1 | 4 | 5 | 2.3 ± 0.67 |
| 15. Learning skills was developed through role-play exercises. | 2 | 4 | 4 | 2.2 ± 0.79 | 0 | 3 | 7 | 2.7 ± 0.48 |
| 16. The tasks in the units made learning easier and more understandable. | 1 | 4 | 5 | 2.3 ± 0.67 | 0 | 3 | 7 | 2.7 ± 0.48 |
| 17. Outcomes for learning tasks helped measure the level of achievement of the objectives. | 2 | 4 | 4 | 2.2 ± 0.79 | 0 | 2 | 8 | 2.8 ± 0.42 |
| Mean rating score for each benchmark. | | | | 2.3 ± 0.7 | | | | 2.6 ± 0.6 |
| Mean rating score for all the benchmarks. | | | | 38.9 ± 11.7 | | | | 44.7 ± 8.4 |

Table 3
Learner satisfaction rating with training process ($n=37$).

| Aspects of the course | Frequency per rating | | | | Mean \pm SD |
|---|----------------------|---|----|----|-----------------|
| | 1 | 2 | 3 | 4 | |
| 1. Organization of training program | 0 | 3 | 25 | 9 | 3.16 \pm 0.55 |
| 2. Lectures | 1 | 5 | 23 | 8 | 3.03 \pm 0.69 |
| 3. Facilitator's competency | 3 | 7 | 20 | 7 | 2.84 \pm 0.83 |
| 4. Facilitator's attitude | 1 | 3 | 24 | 9 | 3.11 \pm 0.66 |
| 5. Activities: role playing exercise, group discussions etc | 2 | 9 | 17 | 9 | 2.89 \pm 0.84 |
| 6. Essential handouts | 0 | 5 | 22 | 10 | 3.13 \pm 0.63 |
| 7. Training materials | 0 | 2 | 25 | 10 | 3.22 \pm 0.53 |
| 8. Time schedule | 1 | 4 | 24 | 8 | 3.05 \pm 0.66 |
| Average rating scores for each aspect of the course | | | | | 3.05 \pm 0.69 |

Table 4
Participant rated levels of difficulty for the different aspects of the nutrition training curriculum.

| Content of nutritional curriculum | Percent | | | |
|--|---------|------|------|-----|
| | VE | E | D | VD |
| 1. Communication skills, interview model and questioning techniques. | 47.9 | 32.4 | 10.3 | 9.4 |
| 2. Patient-centered nutritional counseling model and nutrition counseling technique. | 21.6 | 78.4 | 0 | 0 |
| 3. Dietary assessment. | 8.1 | 43.2 | 48.6 | 0 |
| 4. Meal plan. | 62.2 | 35.1 | 2.7 | 0 |
| 5. Nutrient requirement and food security. | 21.6 | 78.4 | 0 | 0 |
| 6. Nutritional care of HIV infected women, infants and children. | 5.4 | 91.9 | 2.7 | 0 |
| 7. Nutritional issues with drugs for HIV/AIDS therapy. | 43.2 | 37.8 | 13.5 | 5.4 |
| 8. Nutritional management symptoms | 75.7 | 21.6 | 2.7 | 0 |

VE, very easy; E, easy; D, difficult; VD very difficult

appropriate for PLWHA who have complex health care issues and stigma, and need private help with solving personal problems (Mackey and Tan, 2006; Nyblade and MacQuarrie, 2006). Effective nutritional counseling involves addressing nutritional problems appropriate to the client's age, sex, socioeconomic, cultural and ethnic background (Elder *et al*, 1994).

The module focused on communication skills and interview techniques in order to help the HIV VCT counselors obtain information regarding nutritional status and their social and familial context to determine appropriate solutions.

From the process of developing and implementing this nutrition curriculum, we can draw some good lessons. First,

Table 5
 Participants perceived confidence level and competency in nutrition counseling.

| Competency perceived confidence | Pre-test Number (%) | Post-test Number (%) |
|---------------------------------|------------------------|-------------------------|
| Competency | | |
| Excellent | 0 (0.0) | 12 (32.4) |
| Average | 4 (10.8) | 25 (67.6) |
| Low | 33 (89.2) | 0 (0.0) |
| Confidence | | |
| Confident | | 33 (89.2) |
| Not confident | | 4 (10.8) |

the selection of appropriate committee members is important since they determine the needs of HIV VCT facilities for nutritional counseling and ensure success in the support and supervision process. Second, selection of appropriate multidisciplinary specialists improves the quality of the curriculum.

We compared our curriculum with that of the World Health Organization (WHO) curriculum for nutritional care and support of PLWHA (WHO, 2005). The content that was the same between our curriculum and that of the WHO were the relationship between nutrition and HIV/AIDS, food choices based on nutrients, food security, energy requirements, nutritional care for HIV infected lactating and pregnant women and their HIV infants and children and counseling skills. The content that was different between our curriculum and the WHO curriculum was nutritional management of symptoms, food-drug interactions, food safety, personal hygiene, problem-solving nutritional counseling and teaching interviewing and questioning techniques. Our curriculum did not mention alternative medicine as exists in the WHO curriculum. The differences in the curricula originate mainly from the method of cur-

riculum design. Our curriculum focused on expected competencies of learners and aimed at aligning education with local context and local HIV/AIDS related policies. The WHO curriculum concentrated on academic knowledge and skills as the foundations for learners.

The results of monitoring and evaluation show the appropriateness of the curriculum to the local context. More than 80% of participants understand more than half the curriculum content, proving the suitability of our curriculum for the participants. More than 70% of the HIV VCT counselors were satisfied with what they learned from the lectures and learning activities, meaning the program fitted the needs of the learners.

The post-test results suggest the program improved competency and confidence in carrying out their duties (Spady, 1994). The curriculum enhanced the counselor's competencies in nutritional counseling. No one scored low on competency in the post-test. Our study showed a significant ($p=0.001$) increase in the post-test score compared to the pre-test score. Eighty-nine point two percent of the participants had perceived confidence in performing nutritional counseling after the training course.

Our findings suggest the training course may be adopted as continuous education for staff working at HIV VCT facilities and other health care facilities caring for PLWHA. Based on the sharp increase in the number of HIV VCT facilities in recent years, there will be a great demand for training in nutritional counseling of health staff caring for PLWHA (Vietnamese Ministry of Health, 2010). The training program should be considered for integration into the curriculum of nursing schools to improve the quality of HIV/AIDS care in the country. The concept of "aligning education with the local context" can be a model for developing curricula to serve different target clients.

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