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EPIDEMIOLOGY RESEARCH TRAINING IN VIETNAM : EVALUATION AT THE FIVE YEAR MARK

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Abstract : Recently, the importance of research capacity development has been rediscovered as a vital approach to help strengthen health systems for improved global health. The University of Medicine and Pharmacy, Ho Chi Minh City (UMP) in Vietnam in collaboration with the Department of Public Health at the Fukushima Medical University School of Medicine (PHFMU) developed an epidemiology training course for mid-career Vietnamese physicians. We trained a total of 128 participants over four courses since 2004. In order to balance basic and advanced course content for first-time and returning participants, we encouraged active participation of past graduates in teaching Course IV in 2009. Not only did this provide further training opportunities for advanced learners, it also increased project ownership by Vietnamese participants. Although more rigorous evaluation is needed, we believe that this summary of our past activities presents a useful example for others undertaking similar initiatives. To further upgrade the project in Vietnam, institutional support is required to nurture a strong scientific emphasis as well as self-sustainability in research capacity development.

Key words : Public health professional education, epidemiology, program evaluation, Vietnam

INTRODUCTION

In order to improve global health, the 2008 G8 Hokkaido Toyako Summit addressed the importance of strengthening health systems, defined by the World Health Report 2000 as "all the activities whose primary purpose is to promote, restore or maintain health"[1)]. Health

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information was a major component emphasized in the Toyako Framework for Action on Global Health and its follow-up activities[2]. Research capacity development is critical, as it enhances a country's ownership of activities aimed at improving the health system. By collecting, analyzing, and interpreting data in their country, local health professionals and policy makers will come to realize, prioritize, and act towards their country's health problems.

Aimed at filling in the "10/90" gap, the need to strengthen research capacity has been a major focus of developing countries during the last two decades[3,4]. With only 10% of all global health research funding being allocated to 90% of the world's burden of preventable mortality, this global challenge remains unmet[5]. Several organizations from developed countries have implemented and expanded postgraduate training in the areas of public health, epidemiology, and other related disciplines[6]. In Vietnam, for example, several donor organizations have supported overseas training programs and the development in 1996 of a Master's Program in Public Health at the Hanoi School of Public Health[7]. However, these programs only have the capacity to train a small fraction of junior and mid-level researchers.

Having recognized the need for institutional capacity development in research, the University of Medicine and Pharmacy, Ho Chi Minh City (UMP) asked the Population Council in 2000 for assistance to initiate a long-term program for part-time research training for its teaching staff and clinicians[7]. This project served as an innovative and effective in-service research training model. However, the project's major obstacle, arguing against its sustainability, was its long, 9-month duration. Consequently, and this time in collaboration with the Department of Public Health at Fukushima Medical University School of Medicine (PHFMU), the UMP initiated an intensive training course (a short-term, full-time program) in 2004. Since then, we have carried out the course four times. The outcome of the first two courses indicated that a training period of two weeks was preferred over a three-day program[8]. This article summarizes the overall evaluations which cover the four courses, and discusses the future development of our academic partnership.

METHODS

Local organizers initially recruited mid-career physicians and lecturers from their own departments using leaflets, and subsequently from other departments of UMP and its affiliated hospitals. We limited the number of registrants to about 40 for the first three courses and placed focus on those in teaching positions, graduate students, and those with a strong willingness to participate. The number of registrants increased in Course IV, reflecting an improvement in our teaching capacity, our responses to requests from applicants, and difficulties with the prior selection process.

Lectures were mainly provided by two Japanese and one Vietnamese lecturer. In addition, graduates from previous courses served as assistants, helping out with logistics management during the first two courses and with teaching in the last two. Lectures were carried out in English with Vietnamese translation. English course materials were distributed prior to the start of the course. Upon successful completion, participants were given an authorized certificate from UMP and PHFMU.

Table 1. Curricula of the Research Training Courses at the University of Medicine and Pharmacy, Ho Chi Minh City

	Course I	Course II	Course III	Course IV
Course duration	10 working days (August 9–20, 2004)	3 working days (February 21–23, 2006)	10 working days (August 14–24, 2007)	8 days including a Saturday (February 16–24, 2009)
Lectures with discussions	- Core lectures on study design, basic biostatistics, and survey techniques - Epidemiology in a specified field (gerontology)	- Core lectures - Actual epidemiological surveys in various fields	- Core lectures - Actual epidemiological surveys in various fields	- Core lectures - Actual epidemiological surveys in various fields - Advanced lectures on screening tests and logistic regression analysis
Group tasks	- Critical appraisal of medical articles - Protocol development	None	- Critical appraisal of medical articles - Protocol development	- Critical appraisal of medical articles - Statistical analysis of an assigned database - Discussions of homework questions
Required assignments	- Group presentations of a medical article and protocol - Epidemiology and biostatistics review test	- Epidemiology and biostatistics review test	- Group presentations of a medical article and protocol - Epidemiology and biostatistics review test	- Group presentations of a medical article and findings from data analyses - Epidemiology and biostatistics review test

Our courses offered training in basic epidemiology including practical survey skills, which apply to daily clinical practice. The curricula for each course are outlined in Table 1. Based on results from the evaluation of the first two courses[8], the duration and structure of subsequent courses followed the style of the first course. In addition to the lectures with interactive discussions in basic epidemiology, biostatistics, and practical survey techniques, group projects and/or short in-class group exercises were performed, allowing participants to apply their newly acquired knowledge and skills. The research topics covered included maternal and child health, lifestyle-related diseases, and gerontology – topics that often coincide with the needs of developing countries to tackle traditional and emerging health problems.

Although basic epidemiology and biostatistics were included in all four courses, the focus of each course varied slightly depending on the response to local requests and evaluation results of a prior course. For example, the first and third courses focused on protocol development, the fourth course on advanced statistical analyses, and the second course had the shortest period for familiarizing participants with actual epidemiological surveys. During the fourth course, homework questions were distributed daily and discussed on the following day with the help of teaching assistants. This didactic approach was used to help stimulate each participant's thinking on newly learned topics and improve local assistants in teaching.

The evaluation method was selected by referencing similar projects[9,10] published at around the time we planned the long-term preceding course[7], and we have essentially retained the same set of indicators since then. The evaluation consisted of three components : process (participation rates), content (course evaluations), and short-term outcome indicators (self-evaluation of achievements toward training objectives and test scores). The course evaluation form asked participants to rate its usefulness, topic selection, quality of course materials, content level, and course duration based on a five-level scale. A five-level Likert scale was used for self-evaluation of achievements. Although items slightly differed based on training goals among the four courses, common statements about confidence in designing as well as conducting research were included and compared in the present analysis. The test on the last day included true/false or multiple choice questions covering basic epidemiology and biostatistics taught in the course. Additionally, course evaluation sheets were distributed and collected from eight Vietnamese course organizers and instructors during Course IV.

All analyses were performed with STATA statistical software, Version 10 (Stata Corporation, College Station, TX). The frequency of answers of 4 and 5 on the 5-level scale for each indicator was calculated to determine whether there was a significant difference between first-time and returning attendants. Fisher's exact test was used for indicators with a cell whose expected value was less than 5, and the chi-square test was used for the remaining indicators. For instance, the chi-square test was used for the item "increased confidence in research", with observed cell counts of 19, 17, 24 (=43-19), and 3 (=20-17).

RESULTS

Course evaluation results are summarized in Table 2. During the past five years we trained a total of 128 physicians. The fourth course registered the highest number of graduates even though the course completion rate was the lowest (65%). During the evaluations of Courses III and IV, all participants marked the 'usefulness of the course' as superior. The proportion of participants who evaluated the level of the course as difficult was highest for Course IV, followed by Course II, which was the shortest of the four. Additionally, over 70% of participants in Courses I, II, and III agreed that their confidence in conducting research and skills for designing a study had improved. A similar assessment of the participants' level of confidence comparing these two aspects before and after Course IV revealed a greater than 60% increase. In addition, Course IV had the highest median score of tests conducted at the end of each course. Of note, self-evaluations of achievement toward training objectives were significantly higher among returning versus first-time participants, even though their course evaluations did not differ (Table 3).

Table 2. Evaluations of the Four Research Training Courses

Evaluation indicators	Course I	Course II	Course III	Course IV
Completion rate [% (graduates / registrants)]	74% (29/39)	78% (35/45)	75% (27/36)	65% (37/57)
Participants' course evaluation [N (%)[a] of superior or difficult[b]]				
Usefulness of the course (superior)	38 (97%)	33 (89%)	26 (100%)	37 (100%)
Selection of topics (superior)	36 (92%)	29 (78%)	25 (96%)	31 (84%)
Course material (superior)	36 (92%)	31 (84%)	26 (100%)	32 (86%)
Overall level (difficult)	18 (46%)	19 (51%)	11 (42%)	21 (57%)
Participants' self-evaluation of progress toward training objectives [N (%)[a] of agree[c]]				
Increased confidence in conducting research	32 (82%)	27 (73%)	20 (77%)	11 (61%)[d]
Improved skills for designing a study	28 (72%)	31 (84%)	24 (92%)	12 (67%)[d]
Epidemiology and biostatistics knowledge test score [Median % (min, max)]	67% (33, 100)	56% (13, 94)	78% (39, 100)	84% (42, 100)

Note : Results of participants' course and self-evaluation were reported partially in our previous report (8).

a. The number of total respondents to the course evaluation surveys in Courses I (N=39) and II (N=37) were higher than those of graduates because they included participants who could not receive authorized certificates due to unsatisfactory attendance rate or test scores. The numbers of total respondents in Courses III (N=26) and IV (N=37) were less than or equal to the number of graduates.

b. A five-point scale ranging from 1 (poor or easy) to 5 (superior or difficult) was used, and the numbers in the table reflect the proportion of participants who answered 4 and 5.

c. Likert-scale ranging from strongly disagree to strongly agree was used, and numbers in the table reflect the proportion of participants who agree and strongly agree.

d. In the fourth course, participants were asked before and after whether or not they had the confidence to design and conduct a research study. The Likert-scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used. Pre- and post survey data of 18 participants were matched, and a proportion of those showing an increase in the scale are presented in the table.

Table 3. Comparison of Course Evaluations between First-Time and Returning Attendants

Evaluation indicators	First-time attendants (Total N=71)[a]	Returning attendants (Total N=28)[a]	p-value[b]
Participants' course evaluation [N (%)[a] of superior or difficult[c]]			
Usefulness of the course (superior)	68 (97%)	27 (96%)	1.00
Selection of topics (superior)	58 (82%)	25 (89%)	0.55
Course material (superior)	62 (89%)	26 (93%)	0.72
Overall level (difficult)	37 (52%)	13 (46%)	0.61
	(Total N=43)[d]	(Total N=20)[d]	
Participants' self-evaluation of progress toward training objectives [(%)[d] of agree[e]]			
Increased confidence in conducting research	19 (44%)	17 (85%)	0.00
Improved skills for designing a study	25 (58%)	18 (90%)	0.01

[a.] The total number (denominator) is the sum of respondents attending Courses II, III and IV, with identifiable participation histories. Due to missing data from one first-time attendant regarding usefulness of the course and course material, the denominator for these items was actually 70.
[b.] Statistical significance was calculated for the difference between first-time and returning attendants in the frequency of answers of 4 and 5 on the 5-level scale for each indicator. Fisher's exact test was used for the first three indicators with a cell whose expected value was less than 5, and the chi-square test was used for remaining indicators.
[c.] Five-level scale ranging from 1 (poor or easy) to 5 (superior or difficult) was used, and numbers in the table reflect the proportion of participants who answered 4 and 5.
[d.] The total number (denominator) is the sum of respondents in Courses II and III with identifiable participation histories. Data from Course IV was not included since the evaluation indicators were different.
[e.] Likert-scale ranging from strongly disagree to strongly agree was used, and numbers in the table reflect the proportion of participants who agree and strongly agree.

Table 4. Course IV Evaluation by Vietnamese Organizers and Instructors

Evaluation indicators and opinions	(Total N=8)
Participants' course evaluation [N(%) of superior or interested[a]]	
Contribution of the course to research activities	8 (100%)
Contribution of the course to medical services	7 (88%)
Interest in organizing a similar course in the future	8 (100%)
Opinions	
"We appreciate the course very much personally and on behalf of the University of Medicine and Pharmacy, Ho Chi Minh City. I strongly recommend future expansion of the project."	
"Continue the course and raise the content level gradually."	
"The course should continue and be upgraded to allow participants to understand more deeply of meanings behind numbers calculated."	
"For future topics, focus on one design (e.g. cross-sectional) from A to Z, and more on critical appraisal."	
"Training course IV was better than prior courses because it provided homework and analysis practice. Results of the examination can be used for planning the next course."	
"Suggested topics for the future course:prognosis study and related analyses. I hope there will be some more studies that Fukushima and our medical schools co-investigate."	

[a.] Five-level scale ranging from 1 (poor or not at all) to 5 (superior or very much) was used, and numbers in the table reflect the proportion of participants who answered 4 and 5.

All Vietnamese organizers and instructors had a high evaluation of Course IV for its contribution to research activities and medical services conducted at their institutions. They also expressed interest in organizing a similar course in the future (Table 4). Furthermore, they expressed their appreciation toward the course and provided positive suggestions for improving the content.

DISCUSSION

Of the four courses that were carried out, the number of graduates was highest for Course IV. Its contrasting lowest completion rate can be partly explained by its high number of registrants. Alternatively, one can also attribute this to the content level, reflected by the highest number of participants expressing that the overall level of the course was difficult. Moreover, the higher test scores suggest that only registrants with strong motivation completed Course IV. Usefulness of the course, topic selection, and course materials were all highly evaluated, with a significant increase across the courses in the participants' confidence for designing and conducting research. However, this increased confidence was significantly lower among first-time participants. This left us with an important issue to resolve, that is, how to balance the right amount of basic and advanced content that would satisfy both first-time and returning attendants.

Furthermore, there are several methodological limitations to this study. First, this was a before and after comparison study which lacked a control group. Second, neither a long-term nor in-depth qualitative assessment was conducted. Third, comparisons across the four courses should take into account the fact that participants and teaching conditions differed. We note that the results should be cautiously interpreted, given the possibility of overestimating the results due to potential synergy between enthusiastic organizers and participants. Although more rigorous evaluation is needed, we believe that this overall project assessment at the five-year mark not only provided us with a chance to review past activities for further expansion, but could also present a useful example for others undertaking similar initiatives.

With respect to course management, the active teaching participation of past graduates provided further training opportunities for these advanced learners and increased project ownership on the Vietnamese side, resulting in project sustainability. Their commitment was voiced through suggestions and ideas for improving the training course. Langsang and Dennis have stated that "A combination of short-term and long-term strategies, directed at individual, institutional, and country levels are necessary to develop a sustainable system of research"[11]. The approaches used in our programs have been directed toward the individual, and they have provided short-term quantifiable outputs that serve as a model project for academic partnerships between developing and developed countries at a grass-root level. For upgrading the project, further efforts are needed in order to provide institutional support for nurturing a science culture and self-sustainability in research capacity development. Encouraging active participation of teaching assistants is an initial step towards this endeavor. Additionally, to expand our collaborative project, the "external link" between an

academic institute and the local government needs to be strengthened in order to facilitate the translation of research outputs into actions. Likewise, "internal links" within Japanese and Vietnamese institutions are needed, along with fundraising and systematic project evaluations, as explained in detail in our previous report[8]. Taking the above into consideration, we are currently working toward project expansion by re-constructing the training module and establishing partnerships with local governments in both countries.

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