



Training Future Leaders: Experience from China-ASEAN Cancer Control Training Program

Remila Rezhake¹ · Xiao-Qian Xu¹ · Sandrine Montigny² · Anouk Berger² · Shang-Ying Hu¹ · Zhi-Hua Liu³ · Rengaswamy Sankaranarayanan^{4,5} · You-Lin Qiao¹ · Partha Basu⁵ · Fang-Hui Zhao¹

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Abstract

Cancer care professionals are pivotal in translating the knowledge into action in the continuum of cancer control process. Unfortunately, in China and the Association of South-east Asian Nations (ASEAN), limited training opportunities are available for health professionals in the area of cancer prevention and control. Therefore, the Cancer Hospital, Chinese Academy of Medical Sciences (CICAMS), and the International Agency for Research on Cancer (IARC) collaboratively designed and held the China-ASEAN Cancer Control and Prevention Training Program to provide continuing education opportunities for cancer professionals from China and ASEAN countries. The aim of this article is to report on the effectiveness and quality of the program and share our experience. A total of 36 participants from 12 countries completed the whole course including 1-month online learning and 1-week face-to-face workshop and cancer control facility tour in October 2017. After completion of the program, all participants were invited to fill out a questionnaire and to provide their comments on the training course. Out of 36 participants, 33 completed the evaluation form and they rated the training course highly in terms of satisfaction, value, and likelihood of recommending it to other colleagues. Additionally, all participants provided very detailed and practical comments on the course. Such an intensive, short-term, and comprehensive training program is expected to help participants establish a broader view of cancer prevention and control within the wider health services and be involved in national cancer control programs in a more efficient way. This training course could serve as a model for other institutes dedicated to nurturing future leaders in cancer control.

Keywords Continuing medical education · Curriculum evaluation · Professional development · Cancer control

Background

Cancer Burden and Challenges in China and the ASEAN Region

Cancer is a leading cause of death worldwide, particularly in developing countries which accounts for about 57% of cases and 65% of cancer deaths [1]. China and the Association of South-east Asian Nations (ASEAN) Region have a substantial burden of cancer with an estimated 4.3 million new cancer cases and 2.8 million cancer deaths in China [2, 3] and 700,000 new cases and 500,000 deaths in ASEAN countries. Cancer is becoming one of the major public health issues threatening people's health in these areas, and it is imperative to mobilize these regions and encourage them to put a strategic and focused cancer-control healthcare policy in place.

Cancer control through public health interventions requires appropriate policy-making by health administrators, translation of the policies into practice by program managers, and a

✉ Partha Basu
basup@iarc.fr

✉ Fang-Hui Zhao
zhaofangh@cicams.ac.cn

¹ Department of Cancer Epidemiology, National Cancer Center/ National Clinical Research Center for Cancer/Cancer Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, 17 South Panjiayuan Lane, PO Box 2258, Beijing 100021, China

² Education and Training Group, International Agency for Research on Cancer, Lyon, France

³ Department of Gynecology, Shenzhen Maternity and Child Healthcare Hospital, Shenzhen, China

⁴ RTI (Research Triangle Institute) International-India, New Delhi, India

⁵ Screening Group, Early Detection and Prevention Section, International Agency for Research on Cancer, 150 Cours Albert Thomas, 69372 Lyon CEDEX 08, France

concerted effort by the health care providers to deliver services with equity. Health care workers, therefore, play a pivotal role in translating knowledge into action in cancer control. In the China-ASEAN regions, almost all of the countries have taken certain steps to introduce or improve cancer control programs, but there is a huge unmet need for the training of program managers and health professionals in the area of cancer prevention and control. Therefore, in the present manuscript, we have reported on a new initiative launched by the Cancer Hospital, Chinese Academy of Medical Sciences (CICAMS) aimed to provide a comprehensive training opportunity to the health professionals in the region on cancer control planning, promotion of healthy behavior, and cancer prevention and early detection services delivery.

Establishment of the China-ASEAN Cancer Prevention and Control Training Program

For many years, and within the broader framework of the ‘One Belt One Road’ project (OBOR Project), ASEAN countries and China have been aiming to develop a model of cooperation in the region to address major public health challenges including cancer. The China-ASEAN Cancer Prevention and Control Training Program (in short “Cancer Training Program”) is one of the educational programs funded by the Ministry of Health of China under the OBOR project starting from the year 2017. The Cancer Training Program was jointly organized by CICAMS and the International Agency for Research on Cancer (IARC). CICAMS is the National Cancer Center of China and one of Asia’s largest cancer prevention, treatment, and research centers. Since 1998, the Department of Cancer Epidemiology at CICAMS has been committed to improving cancer screening and prevention as well as training health providers from all over China. IARC is well recognized as the specialized cancer agency of the World Health Organization situated in Lyon, France. A core component of the agency’s mission is education and training of cancer researchers and future leaders in cancer prevention and control worldwide in collaboration with national institutes of excellence. The Cancer Training Program launched by CICAMS provided an excellent platform to expand the horizon of the IARC Education and Training Program, especially regarding its initiatives targeting low- and middle-income countries (LMICs).

Therefore, with strong support from the Ministry of Health of China and based on their respective experience in educating health professionals and common goal to train more future leaders in cancer care areas, CICAMS and IARC initiated a joint cancer prevention and control training program to contribute to reducing the cancer burden in China and the ASEAN countries (Brunei, Cambodia, China, Indonesia, Laos People’s Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Viet Nam). Furthermore, the program

aims to promote intercountry collaboration among the future leaders of cancer control to address region-specific research issues. The first course of the program was successfully held in Shenzhen, China, from 23 to 27 October 2017.

Methods

The course program, i.e., targeted participants, main features, content, and activities, was designed between November 2016 and May 2017 by experts from CICAMS and IARC, based on their wide knowledge and experience of the needs.

Selection of Participants

CICAMS and IARC jointly approached the Ministries of Health, the leading cancer treatment and research institutes, and the WHO offices in the ASEAN countries and different provinces of China to identify and select the participants who met the following criteria:

- Public health professionals, oncologists, or other clinicians involved or expected to be involved in policy-making, planning, implementing, and/or monitoring cancer control programs or any of their components, etc. OR researchers involved in or expected to get involved in research relevant to cancer control as principal investigators (PIs) or co-PIs
- Have previous experience and achievements in cancer control (preferred)
- Holder of an MD, or MPH or PhD or other doctoral or master degree in a discipline relevant to the fields mentioned earlier
- Have a good command of English
- Committed to attend the whole course 23–27 October held in Shenzhen, China, as well as a committed to complete preparatory work through an online platform during the 2 months preceding the course

Description of the Training Activities

The program was divided into four main sections:

- Cancer control planning, implementation, and monitoring
- Cancer prevention
- Cancer early detection
- Diagnosis, treatment, and palliative care

The blended combination of different teaching methods—“e-learning, face-to-face workshop, and facility tour”—was then tailored to provide both theoretical and practical knowledge to the participants.

E-Learning

The e-learning session was comprised of a series of lectures made available online to the participants through a dedicated training platform. The 15 lectures pre-recorded by well-recognized experts across the world elaborate the principles of cancer prevention and early detection, which forms the basis for cancer control planning. The e-learning session was made available to the participants in September 2017 and could be completed until late October, before the opening of face-to-face workshop (23–27 October 2017). After completion of each online lecture, the participants had to successfully answer a set of multiple-choice questions to ensure that the contents of each module were well assimilated and the learning objectives attained. The participants received a personalized certificate for completing the e-learning session.

Pre-Course Assignment

During the e-learning session and prior to the face-to-face workshop, each participant was provided with a template to prepare a “poster” describing the demographic information, cancer burden, common risk factor prevalence, and the cancer control activities in his/her country/regions. Instruction, data sources, and template were provided on the online space. The posters were displayed in the lobby outside the meeting room and also shared on the online space during the face-to-face workshop. The faculty selected the best six posters and allowed the participants to make oral presentation of their work during the workshop.

Face-To-Face Workshop

The face-to-face workshop consisted of a mix of oral presentations by the faculty, questions and answer (Q&A) sessions, and group activities which included interactive sessions and group discussions focusing on the cancer control issues within the ASEAN countries, such as challenges and barriers for implementation, regional issues, critical analysis of national cancer control action plans, presentation of practical tools, etc. In the group activity, six groups of six or seven participants were carefully composed in order to have a balance of nationality, gender, and discipline represented. Each group was randomly allocated a country in the region and was given the task of preparing a model cancer control plan for the allocated country. The groups were given enough time to discuss among themselves and were assigned a faculty member as their “mentor.” One member of the group was a national from the country allocated for the group task. Each group had to present the “plan” on day 4. All the participants interacted with the presenting group.

Cancer Control Facilities Tour

The “Cancer Control Facilities Tour” consisted of multiple demonstrations of Chinese efforts in cancer prevention and control. On day 2 and day 5 of the face-to-face workshop, site visits to Sun Yat-Sen University Cancer Center (SYSUCC), Shenzhen Maternity and Child Healthcare Hospital (SZMCH), and Bantian Community Healthcare Center were organized. SYSUCC is the largest integrated cancer center in the whole of southern China for cancer care, education, research and prevention, and a leader in cancer control at the national level in China; SZMCH was established in 1979 and has now become the leading hospital in Shenzhen city for maternity and child health care, medical treatment, education, and research and has also taken a leading role in coordinating cervical and breast cancer screening in the whole city; Bantian Community Healthcare Center is dedicated to providing timely and affordable medical, reproductive, pediatric, and pharmacy care for the residents in 12 service outlets. The most attractive feature of the Bantian Healthcare Center which was highly appreciated by participants was that the center has always put an emphasis on people-oriented service optimization using a very innovative artificial intelligence (AI) cloud-based cervical cancer screening and administrative management network and encouraged doctors to reach out to the population with the use of a mobile clinic, resulting in a very high screening coverage of the population.

With the organization of such facility tour, participants were allowed to be fully immersed and aware of the actions undertaken by the Chinese health system for cancer control from the provincial, city, and community level, respectively.

Evaluation of the Training Program

Participants were asked to fill out a questionnaire which was developed to assess the effectiveness and quality of the training course after completion of the program. Before completing the questionnaire, participants were reminded of our intention to do the evaluation and of their right not to proceed with it if they no longer wished to and written consent was obtained.

Results

Characteristics of Participants

After a careful review of the selection committee composed of experts from CICAMS and IARC, a total of 36 participants from 12 countries (Bangladesh, China, Cambodia, India, Indonesia, Lao’s People’s Democratic Republic, Malaysia, Nepal, Philippines, Sri Lanka, Thailand and Viet Nam) were selected for the Cancer Training Program. Table 1 displays the general characteristics of the participants. The majority of

Table 1 Participant background

Background characteristic	No.	Percent
Age		
< 30 years	4	11.1
30–40 years	15	41.7
> 40 years	17	47.2
Gender		
Male	12	33.3
Female	24	66.7
Current position		
Researcher/epidemiologist	14	38.9
Oncologist/physician	12	33.3
NCCP* registrar/Coordinator/Medical Officer	6	16.7
Other	4	11.1
Work experience		
< 5 years	8	22.2
5–10 years	11	30.6
> 10 years	17	47.2

*NCCP National Cancer Control Program

participants were female (66.7%) and were above 30 years old (88.9%). Of them, 38.9% were currently working as

Table 2 Participant pre-course interest and post-course satisfaction to the different learning topics

Description of the learning topics	Average Score ^a	
	Pre-course ^b	Post-course ^c
List the risk factors of cancer, socioeconomic determinants, and their implications in cancer control	4.21	4.52
Outline the steps in designing and implementing cancer prevention programs associated to such factors	4.15	4.52
Restate the concept of cancer control and its key components	4.03	4.65
List the steps and the benefits of drafting a comprehensive cancer control plan	4.42	4.65
Explain the necessity of integrating cancer control with a comprehensive NCD control plan	4.18	4.48
Explain the concept of cost-effectiveness	3.94	4.48
Explain the underlying principles of cancer control through early detection	4.36	4.74
Outline the strategies to detect the common cancers at their earliest, most treatable stage	4.27	4.65
Enumerate the features of organized screening programs	4.24	4.55
Restate the ethical principles guiding the screening programs	3.85	4.23
Explain that palliative care as a continued care across the entire spectrum of cancer management	3.94	4.52
Enumerate the principles of palliative care	3.70	4.45
Describe the different approaches of providing palliative care	3.76	4.29
Outline the organization of palliative care within cancer control programs	3.91	4.39

^a Average score of post-course and pre-course was compared using Wilcoxon signed rank test, $p = 0.000$

^b Pre-course: Before attending the course, to what extent the following learning objectives/outcomes triggered your interest? (1–5: 1 is “Not at all” and 5 is “Completely”)

^c Post-course: After attending the course, to what extent the following learning expectations have been met? 1–5: 1 is “Not at all” and 5 is “Completely”

researcher/epidemiologist and 33.3% working as oncologist/physician. Nearly half of the participants were senior professionals with more than 10 years of work experience.

Feedback from the Participants

Out of 36 attendees, 33 fully completed the evaluation form and were *Satisfied* (19%) or *Very satisfied* (81%) with the whole training program, with 100% who would *recommend it to colleagues*.

To quantitatively evaluate the program, we asked participants about their pre-course interest and post-course satisfaction with the different topics addressed by the program. Each participant scored 1 to 5 (1 for “Not at all” and 5 for “Completely”) to describe their level of interest or satisfaction for each of the 14 learning items, and average scores were calculated as shown in Table 2. In examining whether the differences between pre-course interest and post-course satisfaction level are statistically significant, Wilcoxon signed rank test was run using SPSS (v21) software with the significance level of 0.05. The result indicated that participants were more satisfied after the training course than their expectation before the course ($p = 0.00$).

Table 3 presents the participants' overall assessment of the blended learning approach (combining e-learning, face-to-

Table 3 Assessment on the blended learning approach (combining e-learning and face-to-face workshop)

Statements (1 = Totally disagree to 5 = Totally agree)	1	2	3	4	5
The e-learning and the face to face course were complementary.	0	3.1%	0	21.9%	75.0%
The distribution of time between the two was balanced.	0	0	6.0%	25.0%	68.8%
The face-to-face workshop in China allowed me to assimilate the theoretical lessons learnt with the e-learning modules.	0	0	3.0%	15.6%	81.3%
During the face-to-face workshop, the time provided for theoretical learning was satisfactory.	0	6.3%	3.0%	25.0%	65.6%
During the face-to-face workshop, the time provided for group activity and discussion was satisfactory.	0	3.1%	0	31.3%	65.6%
During the face-to-face workshop, the time provided for the site visits was satisfactory	0	3.1%	3.0%	31.3%	62.5%
The interaction with the teachers during the face to face workshop was satisfactory.	0	3.1%	0	18.8%	78.1%

face workshop, and facility tour), which is also very positive feedback, with over 90% of participants appreciating the blended training approach by rating each statement “4” or “5.”

Furthermore, participants were encouraged to provide their opinions in different aspects of the training course. Table 4 summarizes the key typical messages conveyed by participants. The overall design of this comprehensive training course was appreciated for the variety of learning activities (e-learning, pre-course assignment, group work, and facility tour) and the focus on interaction between experts and participants. In their comments, they appreciated the quality of interactions through group work activities and the Q&A sessions engaging participants and experts at the end of each lecture. For most participants, this was their first experience of attending such a comprehensive training program and they very much enjoyed this learning strategy.

Discussion and Conclusions

Maintaining sustained and continuous progress in cancer control requires leadership and a cadre of well-trained scientists and practitioners in the field of cancer prevention and control [4]. Currently, limited training opportunities are available for professionals in the cancer field in LMICs to emerge as potential leaders in planning, implementing, sustaining, monitoring, and evaluating cancer control programs. To address this concern, we developed and successfully implemented a short-term training course to train experienced professionals from China and ASEAN countries in the area of cancer control and prevention. This very intensive and comprehensive training course, based on a blended training approach, allowed us to transfer state-of-the-art cancer control knowledge to the participants in a very practical and comprehensive way, which received highly positive feedback from participants. The online space allowed participants to start the e-learning component of the program at their own pace and made it possible to maintain regular contact with participants. Such a cost-

effective, adaptable, pragmatic, and accessible way of teaching is strongly encouraged in future training activities. In the face-to-face workshop, each presentation was followed by a very productive Q&A session and the interventions of the experts stimulated discussion on the challenges and opportunities in the various regions of China and ASEAN countries. The group activity and site visit helped participants to integrate the classes into practice. Furthermore, the group activity allowed participants to collaborate and work together in a multidisciplinary and multicultural team during the course and also helped participants forge future collaborations in the field of cancer control and prevention.

Years of work led by WHO have resulted in integrated global strategies being crafted and implemented to improve health, prevent, and control cancer, even in very economically constrained environments. Despite these efforts, many countries, especially LMICs, still face great challenges in decreasing and controlling the cancer burden. One of the reasons may be that many of the important guidelines from WHO and other international organizations are not adequately disseminated, due to potential language barriers or general lack of access and awareness to actively follow-up and implement updated information. It is imperative that renowned national institutes such as CICAMS take leadership to adapt the most advanced and recent developments in the area and translate them into practice in their own country. Organizing train the trainer activities is one of the key steps which may result in a cascading effect to introduce, translate, and widely implement such global strategies nationwide. The example of Ministry of Health (MoH)-CICAMS-IARC collaboration in our training course is a good example of such activities, which brought together national human resources, national leadings team, and international scientific team. Armed with advanced knowledge and skills conveyed by the training course, participants are expected to return to their own country or province and spread what they learned to their colleagues and become further involved in the national or provincial cancer control research or programs in a more efficient way.

Table 4 Key quotes on the different parts of the course

Theme	Key quotes
E-learning	<p>“Easy access, very efficient platform and convenient for all.”</p> <p>“E-learning gives the basic knowledge before face to face platform and the content is more clear after the face to face presentation.”</p> <p>“Thank you for your every effort to give us such excellent learning platform and resources; I can send the vide to my friend who need to realize the knowledge; as a teacher in medical college, I also can tell my student to study the knowledge of cancer prevention.”</p>
Pre-course assignment	<p>“It is a very good and useful pre-course assignment which allowed each of us to carefully think of the cancer control program in our country/province, and search for information and summarize them into two slides. It is challenging but very worth to do it.”</p> <p>“The assignment help me a lot to get familiar with the websites which are relevant to worldwide cancer control and prevention. I also discover the most update situation of my own country and been able to share it with other participants. The template of assignment was simple yet concise.”</p> <p>“Pre-course assignment let trainees identify the strength and weakness in cancer prevention and cancer control in their own country.”</p>
Face-to-face workshop	<p>“I learned a lot from the teaching faculty. Their research thinking and rigorous scientific attitude touched me a lot. Besides the group work is very efficient for communication and future collaboration.”</p> <p>“I particularly impressed with the Q&A session after every lecture/talk. A lot of questions had been raised by the participants and the answers given by the lectures were always complemented by the faculties. The course was very engaging, interactive and interesting.”</p> <p>“To have group work is good to get participant interaction to each other and practice; but the group work should give an example as a case study, it is not just to select a specific country to be a case to discuss and present, organizer should develop a theme and make participant to think and apply knowledge from the course to make action plan.”</p>
Facility tour	<p>“This community healthcare center is well established, and it also provide a good example for future community building.”</p> <p>“The concept of community health center in Bantian was similar to that of my country. In our country, we also have implemented the mobile clinic to ensure coverage in rural areas. There are certain things that I found to be interesting about Bantian Community Healthcare Centre. One of it is that this center has the technology to perform HPV screening and online registry which was very high-tech and efficient. In addition, the interior settings of the clinic were also very modern and could create a pleasant ambience to patients and visitors. However, we only have limited time during our visit to Bantian.”</p> <p>“I like their mobile bus which provide the cervical cancer screening for women. I think it is very feasible in low resource areas and other countries could try to have this kind of practice.”</p> <p>“SYSUCC is a pioneering cancer center involving medical service, teaching and research. As a member of National Cancer Control Programme of my country, I need to actively involve cancer centers and academia for cancer control activities.”</p>
Logistic and organization	<p>“The arrangement of table and chair for participant in the training room is acceptable but to be more convenience, the room should be larger.”</p> <p>“Very participative, energetic, entertaining organizers; no boring moments the entire time.”</p>
Overall comments	<p>“This course is good, we can keep in touch with some of the participants an eventually initiate collaboration.”</p> <p>“I hope more time to introduce about the context about every country’s cancer burden and risk factors, and how to deal with the difficulties in cancer prevention.”</p> <p>“I preferred the expert comments in discuss section and the group work. Experts gave us more extensive and intensive thoughts. The group work asked us to communicate with the trainees from other countries and made friends with them. I believe we will meet in the real collaboration one day.”</p> <p>I think the training course should try to think about the content, start with the course objective, expectation from participants to learn from the course. And we need to respect the time set in the schedule (start and end in each day). In addition, site visit should not select the place which takes too much time to travel to visit, if so we should arrange overnight stay in that place.”</p> <p>“The blended approach is a brilliant idea in teaching and learning process, particularly in adult learning strategy. It helped us to prepare ourselves to get in touch with the materials beforehand, so the face-to-face sessions were more efficient and effective. I gain much benefits from this approach and I am looking forward to implement the same approach in my workplace. I hope I can get a chance to learn about this from IARC.”</p> <p>“I am a gynecologist. This platform let me know prevention is better than cure.”</p>

In addition, improving the comprehensive knowledge and ability of senior professionals is essential to improve the quality of cancer control and prevention programs at the national/provincial level. In recent years, although many countries have

launched national cancer control programs, they often fail to deliver the expected impact, mainly due to a lack of informed and committed leadership and the inadequate consideration of several core elements before taking action. A well-structured

cancer control program should consider six main components: priorities in cancer control, well-structured leadership team, detailed plan of action, implementation resources such as finances, vertical investment in health service infrastructure and human resources, widespread stakeholder support, and reliable information systems for monitoring and evaluation [5]. Overlooking any component may result in poor quality implementation and lack of impact in terms of expected outcomes of the comprehensive cancer control program. Thus, by attending regularly organized high-quality training activities, both senior and midlevel professionals can be exposed to the latest advances in the field, update and complement their knowledge, and take action in a more considered and scientific way. During our training course, we were always dedicated to helping participants establish a comprehensive and scientific thought to organize and implement a national cancer control program. In one of the participants' own words "this course has opened my mind about the cancer prevention and control and help me to figure out how to begin the national cancer control program with most possible and feasible effort regarding to our country's current condition."

Considering the relatively high educational levels, different background, and working experience of the participants, we designed the evaluation form largely based on the satisfaction levels of participants followed by the open questions for each topic, rather than based on the knowledge gained through the training course which is hard to be standardized and compare before and after the course. Each participant gave their very detailed and considerable comments on the course 1 week after completing course. In addition to revealing their great recognition and appreciation, participants provided very practical suggestions, such as opening the online space earlier, arranging more times for Q&A sessions and group work as well as the site visit, selecting closer facilities to the site visit in order to leave more time for experience, and adding topics on some specific cancer types such as nasopharynx cancer, which is very common in ASEAN regions, etc. All of their comments were seriously discussed in the summing-up meeting after the course and definitely will contribute to the improvement of future training programs. An outcome evaluation survey is also planned, which will contribute to document how participants applied what they learned.

In conclusion, the close collaboration and coordination of the organizers, the careful selection of participants, the tailored design of the program, and the active participation of the trainees have played a central role in the success of this initiative. The 1-month online learning and 5-day in-person course not only provided the opportunity for participants to acquire state-of-the-art knowledge in the area but also forged potential collaborations across countries. We are now preparing the new round of the training program and are planning to make the training opportunity regularly available for professionals from ASEAN counties each year. Our hope is that the information

gained by such a training course can be used to meet the needs of future leaders in developing national cancer control programs. Moreover, with sharing our experience, we attempt to serve as a reference for other universities or research institutes who wish to take actions to promote the training of senior health professionals and future leaders who are pursuing careers in population-based cancer research or global health.

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Compliance with Ethical Standards

Consent for Publication Participants were asked to fill in a questionnaire which was developed to assess the effectiveness and quality of the training course after completion of the program. Before completing the questionnaire, participants were reminded of our intention to do the evaluation and of their right not to proceed with it if they no longer wished to and written consent was obtained.

Competing Interests The authors declare that they have no competing interests.

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