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Building global partnerships through shared curricula for an MPH programme in India and Sri Lanka

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ABSTRACT

Objective: To design and implement a locally relevant competency based MPH programme.

Methods: The demand for trained public health professionals in South Asia is enormous and growing, which created a unique opportunity for a Fogarty International Center-funded University of Alabama at Birmingham-South Asia [Aga Khan University, Pakistan; Manipal Academy of Higher Education, India; and University of Kelaniya, Sri Lanka] international research training in environmental and occupational health (ITREOH) programme. In 2009, a Master of Public Health (MPH) degree programme was designed using a combination of competencies developed by the Association of School of Public Health, the World Health Organization and the Centers for Disease Control and Prevention.

Results: A competency based curriculum was developed with two specialty tracks in applied epidemiology and environmental and occupational health, emphasising applied practice and research.

Conclusions: This is the most comprehensive skill-based MPH programme in the region, which positions each institution as a regional leader in public health training. The success of the programme has been amply demonstrated by placements of graduated MPH students in leadership roles in public, private and academic sectors within their countries.

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Introduction

In most low- to middle-income countries (LMICs) improvements in public health are slow compared to high-income countries (HICs) creating marked global health disparities (Wagstaff, 2000). To implement optimal public health programmes in a country, a trained workforce of public health professionals is crucial (WHO, 2006, 2013b). However, in most LMICs, there is a lack of adequate capacity of public health professionals both in terms of numbers and skills (WHO, 2013b).

Traditionally, sponsored advanced public health degree training for students from LMICs is based in institutions in HICs. While this process fosters collaborative relationships between

institutions of developed and developing countries, the sustainability and institutional capacity building of the programmes in developing countries suffer (WHO, 2013b). We aimed to address this gap in context of a research training programme in environmental and occupational health funded by the National Institutes of Health's Fogarty International Center (NIH-FIC), the University of Alabama at Birmingham (UAB)-South Asia International Training and Research in Environmental and Occupational Health (ITREOH) programme (Principal Investigator, Sathiakumar, N). The ITREOH programme was implemented for more than a decade at three South Asian institutions: Aga Khan University (AKU) in Pakistan; Manipal Academy of Higher Education (MAHE) (Deemed to be University) in India; and University of Kelaniya (UKe) in Sri Lanka; the first two are premiere private institutions in their respective countries, and the third is a leading government institution.

UAB-ITREOH programme

Beginning in 2001, the first five-year cycle of the UAB-ITREOH programme focused on building EOH research capacity in Pakistan at AKU (Sathiakumar et al., 2006). In the second five-year cycle, beginning in 2006, the UAB-ITREOH programme expanded to include MAHE in India (Bhat et al., 2013) and UKe in Sri Lanka (Wickremasinghe et al., 2013). At the onset of each ITREOH cycle, a comprehensive needs assessment was conducted among academia, government, and non-governmental organisations (NGOs) to identify gaps and to prioritise EOH research and training needs. This exercise helped us to identify the top three EOH public health problems that were common across the countries: air pollution (outdoor and indoor); heavy metals (lead, arsenic, and mercury); and pesticides. Further, it was clear that there was a critical need to enhance in-country research skills, build institutional capacity to conduct research, and increase training capacity. We began the ITREOH programme by conducting training through funding of small-scale research projects for academic faculty partnering with government public health officers as applicable. Mid- to senior-level faculty at partner institutions and public health professionals from varied backgrounds including the Ministry of Health had the opportunity to train and develop skills while working on a variety of mentored research projects as well as participating in training activities. Overall, the ITREOH programme mentored 34 research projects, which resulted in 24 peer-reviewed publications and 40 national and international presentations. More importantly, some research projects had a direct impact on policy. For example, a faculty trainee's study of cord blood lead levels of newborns in Pakistan found that over 90% of newborns had levels above 10 µg/dl (Janjua et al., 2008); communication of these results to stakeholders resulted in the development and dissemination of a health communication brochure at the national level on reducing lead exposure in newborns and young children. Several ITREOH programme trainees received awards and honours, and competed successfully for international research funding entities. A critical mass of EOH researchers emerged from the ITREOH programme who served as experts in their respective countries. However, in view of the larger scope of country-wide capacity building for public health professionals, the ITREOH programme training was limited. Further, it was important to establish resources for sustainability after the completion of the funding cycle. Therefore, we aimed to expand the training components of the ITREOH programme to address in-country needs.

Public health is of high priority in South Asian countries to address not only the common infectious diseases but also to address other challenges such as emerging infectious diseases and the chronic disease epidemic (Ghaffar, Reddy, & Singhi, 2004; WHO, 2013a). An adequate workforce of public health professionals both at the government and at private sectors is crucial to tackle these problems, but is grossly lacking (Mahat, Bezruchka, Gonzales, & Connell, 2013). For example in India, the World Health organization (WHO) estimates a need for about 10,000 MPH graduates per year for the next 10 years (Heller et al., 2007).

Acquiring graduate level public health degree training in LMICs often requires travel to overseas universities (WHO, 2006, 2013b). Such training is expensive and only affordable to few. Further, the

curricula of developed countries may not be directly relevant to the developing country setting (Andersson & Grönlund, 2009). More importantly, students tend to remain in the countries where they train creating a brain drain stress in LMICs.

We addressed the inadequacy of in-country capacity building of public health professionals with the initiation of an MPH programme adapted to local setting. Herein, we describe the participatory process of developing locally-adapted competency-based master's in public health (MPH) degree curricula for MAHE and UKe for two tracks, in Applied Epidemiology and Environmental and Occupational Health (EOH). The goals of the country-specific graduate curricula development were to bridge the gaps in public health training and to provide sustainable, locally relevant training opportunities for emerging public health professionals. No programme was developed at AKU as it had a well-established Masters of Science (MSc) degree programme in Epidemiology and Biostatistics since 1996, and in Health Policy and Management since 2000.

At the time when this initiative was conceptualised, there were few MPH programmes offered at private or public institutions in India, while there was none in Sri Lanka. It was apparent that a major proportion of the student pool for the MPH programme would come from or enter into academia, industrial, governmental or privately operated sectors. Therefore, our curricula development process focused on identifying skills that would be optimal in these sectors. The inception of the MPH programme displayed its innovation in the collaboration between the two LMIC institutions in the South Asian region (MAHE and UKe) partnering with a HIC institution (UAB) and an LMIC institution (AKU). Funds from the NIH-FIC supported a systematic curricula development process over a one-year period for an Applied Epidemiology track initially, followed by an EOH track. The framework, processes and results are described below.

Methods

Planning phase

Framework. The envisioned training in public health needed to build a strong workforce relevant to a LMIC setting grounded in pragmatics of public health practices and sensitive to priority public health challenges of the host country. At the same time, the training needed to impart competencies achieved by international MPH programmes offered in the Council on Education for Public Health (CEPH) accredited schools in the United States (US) and Europe (Calhoun, Ramiah, Weist, & Shortell, 2008). As a norm, MPH graduates from US and European universities begin their careers under the direct supervision of those with doctoral degrees in academia or in public health practice. However, public health training is still in its infancy in most LMICs (Mahat et al., 2013). Thus, professionals with MPH degrees from these countries are expected to immediately undertake leadership positions. We found competency-based curricula to be the most effective way of preparing public health graduates in these countries. The Centers for Disease Control and Prevention (CDC) describes competencies as 'a cluster of related knowledge, skills, and attitudes that affect an individual's job and correlates with job performance' (Parry, 1996). Thus, a framework was developed to design an MPH programme that was more applied, offering interdisciplinary knowledge of required disciplines, and integrating a problem-based curriculum. In addition, research or a practice project was included, which would further enhance hands-on skills in the conduct and management of research studies or public health programmes.

Curriculum working group. A 10-member curriculum working group (WG) comprised of senior faculty at the three South Asian universities who were part of the ITREOH programme (AKU, MAHE and UKe) was assembled and led by UAB faculty (Chair, NS; Co-Chair, ED). A notable addition to the WG was a senior professor from the University of Southampton in the United Kingdom (DC) who was a trainer in the ITREOH programme. Two senior faculties from AKU (MK and ZF) provided valuable insight from their perspective of running a successful public health graduate degree programme in a LMIC. The WG developed the curricula in a one-year period through several

meetings and reviews. Four face-to-face meetings were held: February 2008 in Dubai, United Arab Emirates; April 2008 in Manipal, India; December 2008 in Bangalore, India; and March 2009 in Colombo, Sri Lanka. Between these meetings, communications continued via conference calls where curricula materials were circulated and reviewed.

Prior to the first meeting, the chair (NS) and a research associate (MT) synthesised materials for review: (1) results of the in-country needs assessment pertaining to training skills; (2) curricula from several CEPH-accredited schools across the US and curricula from AKU in Pakistan, and other international universities; and (3) a literature review and internet searches on previously developed public health competencies. The WG reviewed the materials and identified three sets of competencies that would be most useful to address training needs: the ASPH; the WHO; and the CDC competencies. A description of these competencies follows:

- (1) *ASPH competencies*. In 1974, the independent CEPH was established by the American Public Health Association (APHA), the Association of Schools of Public Health (ASPH), the national organisation representing deans, faculty and students of accredited schools of public health. ASPH later became the Association of Schools and Programs of Public Health (ASPPH) in 2013 PH (Calhoun et al., 2008; CEPH, 2018). Between August 2004 and August 2006, the 332 members of the academic and practice communities of the ASPH Education Committee, compiled 119 competencies for the five core areas of public health and seven cross-cutting areas. The MPH competencies were broad and functional with approximately 10 competencies in each core field of public health (epidemiology, biostatistics, health policy and management, social and behavioural sciences and environmental health science) and around 70 other competencies representing integrated knowledge and skills and culture, leadership, professionalism, programme planning, public health biology, and systems thinking. Despite being superseded by CEPH's 'MPH and DrPH Foundational Public Health Knowledge'; and 'MPH Foundational Competencies' developed in 2016, the ASPH, now known as ASPPH's Master of Public Health core competencies, are still a relevant resource and guide for educators, administrators, and students (Krisberg, 2017).
- (2) *WHO competencies*. In 2003, the WHO-led inter-country meeting of Public Health Institutions in the South East Asia Region developed a group of competencies and recommended the curriculum for an MPH in Public Health for the South East Asia Region. The competencies were broadly grouped under: (1) Public Health Management Competency; (2) Teaching Competency; (3) Research Competency; and (4) Leadership Competency. The WHO competencies address the skill sets required by public health professionals practicing in LMICs (WHO, 2002, 2005).
- (3) *CDC Competencies*. In October 2004, the CDC and the Council of State and Territorial Epidemiologists (CSTE) convened an expert panel to define applied epidemiology competencies (AEC) for local, state, and federal public health epidemiologists (CDC, 2008). Three tiers were developed to reflect the level of experience, knowledge, and job responsibilities: tier 1 – entry level or basic; tier 2 – mid-level; tier 3a – supervisory; and tier 3b-senior scientist. The panel comprised of representatives from the CDC, state and local health agencies, schools of public health and industry. The expert panel worked through a structured process, which included ample opportunity for input from practicing and academic epidemiologists, to define the AECs. The competencies developed by the panel for four tiers of applied epidemiologists were broadly classified under eight broad domains: (1) Assessment and Analysis; (2) Basic Public Health Sciences; (3) Communication; (4) Community Dimensions of Practice; (5) Cultural Competency; (6) Financial Planning and Management; (7) Leadership and Systems Thinking; and (8) Policy Development.

The WG synthesised the competencies from ASPH, WHO and CDC, mapped the competencies with each other and then mapped them to individual courses, while finalising the course contents. This process is described as follows.

Design phase

Matrix of competencies. The ASPH competencies served as the starting point for the competency development. To each ASPH competency, a corresponding WHO and CDC competency sharing similar core elements was appended creating a matrix. The three sets were identified with unique numbers and a prefix (ASPH: MPH; WHO: P or R; CDC: CDC). [Table 1](#) illustrates three examples from the matrix. For the competencies that were unmatched, they were used as standalone competencies.

Mapping competencies to courses. We finalised the competencies and the course contents using a three-step process: (1) developing an outline for the MPH programme and course topics using the existing MPH curricula from UAB, and other CEPH-accredited public health institutions in the US; (2) reviewing and revising the goals and objectives of each course. We obtained course syllabi from instructors at UAB and evaluated the objectives for individual courses; (3) mapping the competencies from the matrix to each goal and objective of a course. Such mapping involved using the ASPH competencies as the primary resource and incorporating additional practical skills from the WHO and CDC competencies; and (4) identifying gaps in course syllabi to accommodate residual competencies and incorporating changes to the syllabi in order to achieve the competencies. The course masters at MAHE and UKe worked with the US mentors closely to finalise the syllabi for courses for the Applied Epidemiology and EOH tracks. For the core courses and the applied epidemiology track courses, ASPH competencies were supplemented with CDC and WHO competencies. For the track courses in EOH, ASPH competencies were the primary resource. [Tables 2](#) and [3](#) provide the final MPH curricula for Applied Epidemiology and EOH for MAHE and Applied Epidemiology for UKe, respectively.

Evaluation of competency attainment. For each course, written class tests and homework assignments are administered to assess students' knowledge of specific concepts and understanding of the subject matter while the individual projects, class discussions, integrative experiences and practicum projects assess their ability to apply their knowledge to practice.

Timeline from design to implementation. The MPH curriculum planning, development and implementation was conducted over a one-year period. [Table 4](#) provides a chronology of meetings and activities.

Implementation

The MPH degree programme in Applied Epidemiology was introduced in MAHE in 2009 and the EOH track in 2011. UKe implemented the applied epidemiology programme in 2011.

Table 1. Examples from the ASPH/WHO/CDC competencies' matrix.

	ASPH	WHO	CDC
Example 1	MPH 21. Describe disease patterns according to person, place and time	P2- Prioritise health problems P3- Identify threats to the environment	CDC I- Skill Domain – Assessment and Analysis A. Ensure identification of public health problems pertinent to the population
Example 2	MPH 22- Define and use basic epidemiologic terms as they are commonly used today MPH 23- Calculate and interpret measures of disease in one population, such as risk, rate, incidence, and prevalence MPH 24- Calculate and interpret relative measures of disease relative risk) MPH 25- Calculate and interpret impact measures of disease (attributable risk)	R2- Design and implement Epidemiological and Health Systems research studies	CDC I -Skill Domain – Assessment and Analysis C. Design investigation of acute and chronic conditions or other adverse outcomes in the population

Table 2. Applied epidemiology track curriculum.

Courses	Credits	ASPH	WHO	CDC
Core Courses (15 credits)				
Biologic Bases of Health	0*	MPH 38, 39		CDC II
Epidemiology I	3	MPH 21–25	P1,P2	CDC 1A
Biostatistics I	3	MPH 1–6	P1, P2	CDC 1A
Fundamentals of Environmental and Occupational Health	3	MPH 21	P3	CDC 1C
Social and Behavioural Core	3	MPH 32	P2	CDC 1D
Introduction to Public Health Systems and Population-based Health Programmes	3	All	P1, P2	CDC 1A
Track Requirement Courses (21 credits)				
Epidemiology II/Lab	4	MPH 21–25	P1, P2	CDC 1A
Epidemiology of Chronic Diseases	3	MPH 21	P2	CDC 1C
Epidemiology of Infectious Diseases	3	MPH 21	P2	CDC 1C
Biostatistics II	3	MPH 6–11	P1, P2	CDC 1A
Surveillance	2	MPH 21–25	P10	CDC 1B
Research Methods (Survey Methods, Data Collection, Management and Analyses)	3	MPH 22-25, 32	R2, R5	CDC 1C, 1D
Community Practice And Health	3	MPH 21	P2	CDC 1A
Electives Courses (9 credits)				
Design and Implementation of Public Health Interventions	3	MPH 21, 32	P1,P2	CDC 1A
Health Communication: Theory and Practice	3	MPH 32	R5	CDC 1D
Biostatistics III	3	MPH 21–25	P2	CDC 1A
Programme Monitoring and Evaluation	2	MPH 22–25	P2	CDC 1D
Research Grant Development/Programme Management	2	MPH 22	R2, R5	CDC 1D
Health Policy Development	2	MPH 21, 32	P1, P2	CDC 1A
Seminar Series	1–2	Specific to the topic	Specific to the topic	Specific to the topic
Practical Skills (15 credits)				
Public Health Integrative Experience	3	All	All	All
Thesis [†] : Practice or Research Project	12/15	MPH 22-25, 32	R2, R5	CDC 1C, 1D
Total Credits[‡]	60/75			

Notes: *Non-credit course for all non-medical students.

[†]UKe, 12 credit hours; MAHE, 15 credit hours.

[‡]UKe, 60 credit hours; MAHE, 75 credit hours due to additional credit hours for field and laboratory components of some courses.

Although the programme was developed jointly, each university took ownership of their own programme to comply with their individual university academic regulations including the implementation. Both programmes were taught in English.

MAHE University

The two-year MPH programme is offered over the course of four semesters. The credit-based programme required 100 semester credit hours at the time of inception and was later revised to 75 credit hours in 2012 (Table 2). The credit hours are distributed among required and elective courses, integrative experience and project work. All courses in the programme have theory, self-directed learning, problem-based learning and practical session components, the latter including computer-based laboratory training and/or fieldwork.

For integrative experience, students in their third semester are expected to undergo one-month internship in academia, research institutes, non-governmental organisation (NGOs), National Public Health organisations, international organisations or industry. The one-month training provides an opportunity to the students to get real-world setting experiences and practice. Students in their last semester develop and complete a research project which helps them to apply their skills in practice.

Performance in each course is evaluated on a 10-point grading system as follows: 10 (A+ grade), 9 (A), 8 (B), 7 (C), 6 (D), 5 (E) and <5 (F). A minimum 5-grade points (E) is required for a pass in a course. Further, a university exam is held at the end of each semester comprising written, oral and practical components. The final performance for the degree is evaluated out of a maximum of 100 marks, of which 30 is for internal assessment (course work) and 70 for the university examinations; a

Table 3. Environmental and occupational health track curriculum.

Courses	Credits	ASPH	WHO	CDC
Core Courses (15 credits)				
Biologic Bases of Health	0*	MPH 38, 39		CDC II
Epidemiology I	3	MPH 21-25	P1,P2	CDC 1A
Biostatistics I	3	MPH 1-6	P1, P2	CDC 1A
Fundamentals of Environmental and Occupational Health	3	MPH 21	P3	CDC 1C
Social and Behavioral Core	3	MPH 32	P2	CDC 1D
Introduction to Public Health Systems and Population-based Health Programs	3	All	P1, P2	CDC 1A
Track Requirement Courses (21 credits)				
Environmental and Occupational Toxicology	3	ENH 1-2, 4, 6		
Environmental and Occupational Epidemiology	3	EPI 12, 21, 23; MPH 11, 27;ENH 1-8		1A, 1B
Environmental Exposure Assessment and Control	3	ENH 1-3		
Industrial Hygiene and Health	3	ENH 1-4, 7 8		
Occupational and Environmental Safety	6	ENH 1-3, 5, 8		
Risk Assessment in Environmental and Occupational Health	3	ENH 1, 3, 5-7		
Electives (9 credits)				
Research Methods (Survey Methods, Data Collection, Management and Analyses)	3	MPH 22-25, 32	R2, R5	CDC 1C, 1D
Design and Implementation of Public Health Interventions	3	MPH 21, 32	P1,P2	CDC 1A
Health Communication: Theory and Practice	3	MPH 32	R5	CDC 1D
Program Monitoring and Evaluation	2	MPH 22-25	P2	CDC 1D
Research Grant/Program Management	2	MPH 22	R2, R5	CDC 1D
Health Policy Development	2	MPH 21, 32	P1, P2	CDC 1A
Seminar Series	1-2	Specific to the topic	Specific to the topic	Specific to the topic
Practical Skills				
Public Health Integrative Experience	3	All	All	All
Thesis [†] : Practice or Research Project	12/15	MPH 22-25, 32	R2, R5	CDC 1C, 1D
Total Credits[‡]	60/75			

Notes: *Non-credit course for all non-medical students.

[†]UKe, 12 credit hours; MAHE, 15 credit hours.

[‡]UKe, 60 credit hours; MAHE, 75 credit hours due to additional credit hours for field and laboratory components of some courses.

Table 4. Chronology of activities for the curriculum development.

Dates	Activities
February, 2008	Formation of working group Identification of key challenges, resources and objectives
April, 2008	Formative assessments of strengths and weakness at MAHE and UKe Plans for recruiting faculty and students for the MPH program
December, 2008	Review of course syllabus and core competencies Mapping of core competencies to course objectives
March 2009	Course masters finalized from MAHE and UKe Course materials finalized with course objectives and competencies Resources identified for course contents
August 2009	Begin MPH in Applied Epidemiology at MAHE
August 2012	Begin MPH in Applied Epidemiology at UKe

Note: MAHE: Manipal Academy of Higher Education, India.

UKe: University of Kelaniya, Faculty of Medicine, Sri Lanka.

minimum of 50 is required for a pass. At the culmination of this degree programme, students have an option to pursue a career in either practice or research within the chosen public health field.

In 2011, MAHE initiated an EOH track that focuses on identification and analysis of environmental and occupational hazards in the workplace. Track-specific courses permit acquisition of skills pertaining to EOH.

University of Kelaniya

The two-year applied epidemiology programme offered over the course of four semesters is organised on a modular basis, with a credit system. According to the Sri Lankan Qualifications Framework of the University Grants Commission, a two-year Masters with both didactic and research components should have a minimum of 60 credits with modularised courses. (UGC, September 2015) Each course has at least two in-course assessments (homework and quizzes) comprising 30% of the final marks. The end of module assessment comprises 70% of the final marks. Grading schemes are numerical scores as follows: 85+ (equivalent to A+ grade), 70–84 (A), 65–69 (A–), 60–64 (B+), 55–59 (B), 50–54 (B–), 45–49 (C+), 40–44 (C), 35–39 (C–), 30–34 (D), 25–29 (E) and <25 (F). To graduate, a candidate shall have an average C grade. The degree requirements include core track and elective courses and integrative experience. The thesis project is multidisciplinary and requires trainees to apply skills in study design, data collection, analysis, interpretation, and dissemination of results. Students at UKe also undergo one-month internship at academic or non-academic settings related to public. In their final semester, students complete a multidisciplinary research project. Students from two or more disciplines work together on a single project with guidance from mentors in the respective disciplines. Disciplines can include biomedical sciences, applied health sciences, health promotion, pharmacy, allopathic medicine, ayurvedic or homeopathic medicine. For students whose goal is to work in public health practice or policy, a practicum must be completed, with a focus on translating research into practice (implementation/intervention or policy). Some examples of practicum experiences include: evidence-based practice projects, translating new research into practice, translating research into public policy, etc.

The integrative experience in both MAHE and UKe provides opportunities for students to work with professionals in hospitals, research centres, public health organisations and NGOs. Working in small teams for the research projects or the practicums, the students engage in group work and receive systematic feedback from faculty and peers that mirror experiences that students will encounter in real-world scenarios. The practical and hands-on experiences facilitate students learning on team management, negotiation, effective communication, and conflict resolution strategies, skills that build leadership.

Resources

Physical space, library and administrative resources. At MAHE, a separate department was established for the implementation of the MPH programme with a core group faculty dedicated to the programme. The MPH faculty was assisted by the faculty in community medicine. Other resources including classrooms, library resources and administrative personnel were housed within the MAHE School of Medicine. At UKe, the department of Public Health was established within the existing department of Community Medicine. All resources including faculty, space, classrooms, and administration were shared with the Department of Community Medicine.

Teaching materials. We identified potential resources to support the course materials as per the requirement for each of the sites. With permission from UAB, course materials including lecture notes and teaching aids were made available to the course instructors. Several other resources including text books, internet and online library resources were also made available. A repository of all the materials was developed. Using the above resources, course instructors developed course materials adapted to their country using country-specific health statistics, examples from research and national public health programmes and case studies that were relevant to local settings. All course materials were developed in the English language.

Course instructors. At inception, most of the teaching faculty in the two MPH programmes were ITREOH trainees, some of whom also had the opportunity to come to UAB for specialised training for certain courses such as health economics, health behaviour, etc. During this time, teaching skills were developed by meeting one-on-one with course masters of specific courses and engaging in

activities to enhance training. This included attending relevant classes and seminars, sessions on teaching techniques, and observation of UAB faculty teaching. The training culminated in the MAHE/UKe faculty trainee delivering a lecture at a class or a seminar with feedback from UAB faculty. Thus, the ITREOH programme-trained faculty were the backbone of the MPH programme. In addition, newly recruited faculty, retired academicians and senior/retired government personnel filled the trainer gaps at MAHE. Also, UKe partners with a sister university in the same city (the University of Sri Jayawardnepura) whereby primary or adjunct faculty members of both universities teach the programme. Visiting UAB faculty routinely provide guest lectures and are facilitators at seminars.

Outcomes

MAHE has successfully graduated seven batches of MPH students since the commencement of its programme; (Applied Epidemiology, $n = 146$; and EOH, $n = 19$).

The students enrolling in the MPH programmes at MAHE are diverse and have varied backgrounds including medicine (allopathy, ayurveda and homeopathy) (26%), dentistry (28%), nursing (16%) and allied health sciences (18%). MAHE graduates have been successfully placed in leadership positions at government or private institutions as follows: government/private research institutions, 32%; NGOs, 30%; government public health, 22%; academia, 10%; not known, 6%. At UKe, the programme has enrolled three batches, each comprising 22–28 students. The student pool ($n = 91$ in four batches) enrolling in the MPH programmes at the UKe are diverse comprising doctors (26%), ayurveda physicians (12%), health promotion graduates (18%), nursing graduates (31%) and other science graduates (13%) including dental surgeons ($n = 2$), pharmacists ($n = 3$), human biology ($n = 1$), speech and hearing sciences graduates ($n = 2$), physiotherapist ($n = 1$) and science graduates ($n = 3$). The classes are held on every Friday and Saturday which allows students the flexibility to continue to work and learn at the same time. Almost all students enrolled in the MPH programme at UKe are work-study students who are currently employed at various levels in the Ministry of Health. A small percentage of MPH graduates enrol into doctoral programmes in overseas universities.

Future accreditation. We had developed the MPH curriculum with a consideration that the curriculum would meet the standards for CEPH accreditation in due course of time. Thus, the ASPH competencies, considered as core competencies at the time (2008–2009), were central to the competencies included in the curriculum, paving the way forward toward accreditation.

Discussion

The UAB-South Asia ITREOH programme-initiated MPH degree programmes in response to the in-country critical deficit of public health workforce. Following a systematic curriculum development process, we found that a competency-based curriculum provided greater accountability for linking theory with practice.

Unlike HICs where institutionalised training of public health professionals began in the early part of the twentieth century, graduate MPH programmes are limited in LMIC settings. The main barriers to establishing such programmes are lack of political will, limited resources in terms of trained professionals and funding for research. Often times, international funding given to LMICs is limited to a specific programme or disease-specific rather than overall capacity building capacity of the public health system. At the time of inception of our programme, very few programmes of graduate public health education were established in South Asia. Such programmes included the MSc programmes at AKU, the BRAC James P Grant School of Public Health in Bangladesh in 2001, and the Public Health Foundation of India in 2006 that established five major centres for training and research across India. At the present time, 14 of the 29 states in India offer MPH programmes,

(Target Study, 2018) while the UAB-ITREOH MPH programme remains the only program in Sri Lanka to date.

The two MPH programmes at MAHE and UKe faced several challenges from development to implementation. Our previous paper describes in detail the challenges and lessons learned during the implementation of the MPH programme at MAHE (Bhat et al., 2013). Some of these challenges included presenting the importance of the initiative beyond the programme planners to the board of directors and academic advisors, expanding public health education to students that did not demonstrate diversity in background, and imparting skills that readied the MPH students to transition into leadership roles. Producing a critical mass of public health professionals also led to the challenge of ensuring that job opportunities for the new MPH students were available.

UKe did not have similar problems. The programme was inbuilt into the Department of Community Medicine. Being a state funded University, UKe came under the purview of the University Grants Commission of the Ministry of Higher Education. As a norm, all the academic programmes including postgraduate courses are approved by the Standing Committee for Medical and Dental Sciences in the Ministry of Higher Education. The UKe MPH curricula including individual course syllabi and their competencies were reviewed and approved by the Standing Committee over a period of one year. While it took longer time to implement the MPH programme at UKe as compared to MAHE, the approval from the Ministry of Education and political buy-in by the Ministry of Health guarantees local ownership and active support for the programme. In Sri Lanka, postgraduate courses in public health were limited to physicians pursuing postgraduate degrees. Given the global trend in training in Public Health, UKe decided to broaden the scope of public health training to encompass a team approach that included all professions engaged in public health. Although we anticipated problems, we have found students with diverse backgrounds were able to study and work together with mutual understanding and much cooperation.

The MPH programmes at MAHE and UKe are self-sustaining. Since 2009, MAHE has expanded the MPH programmes to include concentrations in Maternal and Child Health, Global Health and Health Policy. Being a private university, MAHE has the resources to scale-up the MPH programme at their other campuses in India within a short time frame. The UKe programme is fully supported by the Ministry of Health and receives students who are public health professionals currently employed in the Ministry of Health. Due to the support from the Ministry of Health, supervisors of such personnel facilitate training by providing leave and other work arrangements. UKe plans to begin their environmental and occupational health in the next two years.

The strength of the programme lies in the problem-based competency-based curriculum; enabling interaction between academic faculty and public health practitioners, with students as the bridge. It also benefited from the unique opportunity to capitalise on existing collaborative relationships between the three South Asian universities through resource sharing. This is the most comprehensive skill-based MPH programme in the South Asia region, which positions each institution as a regional leader in public health training. The success of the programme has been amply demonstrated by entry of graduates into leadership positions in academic, government and privately operated public health sectors within their countries. The investment in research and teaching training through ITREOH programme ultimately achieved a sustainable and long-term contribution of the FIC to develop and advance public health training and research skills in the LMICs.

Public health implications

The ITREOH programme was designed to develop locally-adapted competency-based MPH degree curricula with goals appropriate for emerging public health professionals. Despite challenges, the UAB-ITREOH programme was successfully implemented and contributed to the training of local public health professionals, development of the MPH course, and addressing a gap in the two countries. If educational programmes are to continue to improve and become sustainable, there should be a cohort of pioneers that facilitate a sustainable change and produce future cohorts that

continue to uphold the goals. This programme was successfully implemented, and the process was carefully documented, which should assist other institutions wishing to implement similar MPH programmes. The outcomes of these educational programmes will provide a plethora of well-prepared public health professionals to address public health problems locally and globally.

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