

Graduate Public Health Education – Singapore’s Contribution to Strengthening Capacity in the Region and Beyond

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Abstract

The year 2008 marks the 55th anniversary of the graduate public health programme in Singapore. This article traces the evolution of the programme—from the Diploma in Public Health in 1953 to the Master of Public Health in 2007—in response to changing challenges and needs. It also discusses the role Singapore can continue to play in addressing global inequities in access to public health education and in strengthening public health capacity in the region and beyond.

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Introduction

The effectiveness with which the world tackles its most pressing public health problems depends crucially on the calibre of its public health workforce.¹ Institutions of higher learning play a critical leadership role in this regard, both to build capacity at the national, regional and global levels, and to ensure that public health policy and practice is underpinned by scientific rigour. For this reason, many of the leading universities of the world have well-established schools of public health which are separate from, and independent of, the traditional schools of medicine.

Since the majority of graduate schools of public health in the world are found in the advanced industrialised nations, public health education and training opportunities tend to lag behind in the developing world where the needs are the greatest. According to 1 estimate, Southeast Asia has only 12 graduate schools of public health² for a population of well over 1.5 billion people. Singapore, despite its impressive economic achievements and first-world status in terms of living standard, is among those that do not have a graduate school of public health. It has a small Department of Community, Occupational and Family Medicine (COFM) within an undergraduate medical school. Nevertheless, notwithstanding its *raison d’être* being undergraduate medical teaching, the COFM Department has managed to play an active role in graduate-level public health education and training.

The year 2008 marks the 60th anniversary of the establishment of the COFM Department as well as the 55th anniversary of the University’s *de facto* graduate public health programme. The teaching of Public Health subjects to undergraduates, which began in 1948 with the establishment of the precursor Department of Social Medicine and Public Health (SMPH), has been described elsewhere.³ This article describes how graduate public health education and training in Singapore has developed and evolved over the years in response to changing needs and also discusses the role Singapore can continue to play in strengthening public health capacity and systems in the region and beyond.

1953 to 2006, from Diploma to Master of Medicine (Public Health)

The graduate programme in public health traces back to 1953 when the undergraduate SMPH Department of the Faculty of Medicine, University of Malaya in Singapore, with some help from the World Health Organization, offered a 9-month course leading to the Diploma in Public Health (DPH). Much of the landscape has changed since then: The former colony of Singapore, which at that time was described as a “filthy, overcrowded city with barely one-third of the urban population housed properly”,⁴ gained independence in 1965 and has now attained first-world living standards (GDP per capita US\$50,299 purchasing

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power parity, ranking 3rd in the world)⁵ with one of the lowest infant mortality rates (2.3 deaths per 1,000 live births compared to 82 deaths per 1,000 live births in 1950), and highest life expectancies in the world (81.8 years compared to 62 years in 1957).⁶ The University of Malaya in Singapore has become the National University of Singapore (NUS) while the Faculty of Medicine has been renamed the Yong Loo Lin School of Medicine. The SMPH Department has grown into the Department of Community, Occupational and Family Medicine (COFM) encompassing 3 disciplines: Public Health, Occupational Medicine and Family Medicine.

From the outset, only doctors were eligible for enrolment in the graduate public health programme, due to the post-colonial legacy of allowing only medically qualified doctors to specialise in public health medicine. In 1973, the DPH was upgraded to a Master of Science degree, or more accurately, 2 degrees—the Master of Science (Public Health) and the Master of Science (Occupational Medicine). In 1992, coinciding with the government's grant of specialist status to public health medicine and occupational medicine, which placed them on equal footing with other clinical specialties such as medicine and surgery, the degrees were renamed Master of Medicine (Public Health) and Master of Medicine (Occupational Medicine), respectively. The public health curriculum initially emphasised traditional core subjects such as epidemiology, biostatistics, communicable diseases and disease prevention. It was revamped in 1987 to incorporate “newer developments” such as chronic disease epidemiology, health economics and healthcare management. Beginning in 2000, and coinciding with a university-wide shift towards a US-style modular/credits system, electives were introduced so that students' training could be tailored to suit individual career needs and aspirations.

2007 onwards: Master of Public Health Programme

From August 2007, the MMed (Public Health) and MMed (Occupational Medicine) were once again merged and superseded by the Master of Public Health (MPH) degree. The new programme opened its doors for the first time to non-medical graduates. This was in line with the current international practice in the USA, UK, Europe and Australia and in acknowledgement of public health being a multi-discipline. For medical graduates, the course duration remained at 1 year of full-time study or 2 years of part-time study (40 credits). However, for non-medical graduates, the minimum period is 18 months full-time or 36 months part-time (64 credits). The recruitment exercises for the initial 2 years (2007 and 2008) drew about 120 applications each (for 35 places), about half of whom were from non-medical backgrounds.

The new MPH programme seeks to “equip graduates to assume leadership and administrative roles in public health, health administration, occupational and environmental health, and clinical and health services research.” Accordingly, the curriculum is re-organised around a core of compulsory, broad-based modules, with student choice of electives to fit into 1 of 3 specialisation tracks, namely: (a) General Public Health (for careers in Public Health and Health Administration); (b) Environmental and Occupational Health (for careers in Occupational Health); and (c) Clinical Epidemiology/Clinical Effectiveness (for careers in Clinical Research and Health Services Research).

The course kicks off with a foundational “Public Health Biology & Ethics” (core) module designed to establish common ground between medical and non-medical participants with respect to 21st century public health practice. The moral-philosophical bases for equitable allocation of finite health resources are explored, as are issues such as the right to life, right to healthcare, and potential conflicts between individual rights and societal claims. The emphasis on ethics underlines the importance placed on values in public health policy making.

The other core modules focus on the methodological skills needed for measuring population health and conducting epidemiologic studies relevant to disease prevention and control. They also provide a solid basis for understanding global public health **issues such as environmental health, disease prevention and health systems performance**. The remainder of the course is made up of elective modules. A supervised practicum allows students to apply the knowledge and skills learned in a real-world setting. Table 1 lists the module offerings for the inaugural year of the programme.

Training Global Public Health Leaders

Between 1953 and 2006, a total of 833 medically qualified personnel from 35 countries have graduated from NUS with either the Diploma or Masters degree in Public Health or Occupational Medicine. Three out of 4 (74.54%) are from developing countries. Most have returned home and are actively involved in shaping the public health policies and programmes of their countries. The majority are from Asia, but we have had students from Africa (Tanzania, Uganda, Zimbabwe, Kenya, Nigeria and South Africa) and other countries as far-flung as the Seychelles, Papua New Guinea, Tonga, South Yemen and Romania (Table 2).

Many have served or are currently serving in senior positions in their respective countries, and a few have even risen to the top as directors of health or heads of academic departments. Among our most illustrious alumni is Dr. Margaret Chan, the current Director-General of the World Health Organization (WHO). In a speech at NUS coinciding

Table 1. MPH Modules for 2007/8

Core Modules		
Public Health Biology and Ethics		
Lifestyle & Behavior in Health & Disease		
Quantitative Epidemiologic Methods		
The Environment in Health & Disease		
Principles of Epidemiology		
Health Policy & Systems		
Compulsory Module		
Practicum		
Elective Modules		
General Public Health	Occupational and Environmental Medicine	Clinical Epidemiology
Control of Communicable Diseases	Industrial Hygiene	Critical Appraisal I and Scientific Writing
Control of Non-communicable Diseases	Environmental Toxicology	Critical Appraisal II and Evidence-based medicine
Planning Health Promotion Programmes	Occupational Ergonomics	Design, Conduct & Analysis of Clinical Trials
Medical & Humanitarian Emergencies	Workplace Assessment	Clinical Epidemiologic Methods
Design, Monitoring and Evaluation of Health Programmes	Occupational Health Practice	Measuring and Managing Quality of Care
Management of Healthcare Organisations	Clinical Occupational Medicine	Introduction to Health Services Research
Measuring and Managing Quality of Care		Advanced Epidemiology
Critical Appraisal I and Scientific Writing		Advanced Quantitative Methods
Introduction to Health Services Research		
Advanced Epidemiology		
Advanced Quantitative Methods		
Clinical Public Health Practice		

* Teaching is conducted mostly by academic staff of the COFM Department, with some components taught by invited industry professionals and overseas lecturers. Students can also register for cross-faculty modules, subject to their acceptance by the relevant Faculty/School.

with the launch of World Health Day in Singapore on 3 April 2007, she had these heartwarming words to say: “This is a campus I know well from the past. These grounds bring back fond memories of a good educational experience. The time I spent at this university, earning a degree in public health, helped equip me to move on in my career and to assume higher responsibilities.”⁷

Targeting Regional Public Health Issues

Perhaps of even broader reach than the formal degree courses are the short courses conducted by the COFM Department that target specific public health issues relevant to the region. Typically lasting between 5 to 10 days, these short courses deal with topics such as “Community Health Programmes”, “Health Education and Health Promotion”, “Health Hazards in the Healthcare Industry”, “Hospital Reform and Restructuring”, “Measuring and Managing Quality of Healthcare” and “Medical and Humanitarian Emergencies”. While the majority of the participants (761) are from Singapore, these short courses have also benefited nearly 300 participants from 48 countries, including places

as faraway as Burkina Faso, Cameroon, Djibouti, Palau, Mongolia, Malta and Mexico.

The above list does not include similar short courses conducted overseas by COFM staff, for example, under the auspices of the World Bank Institute or the Singapore International Foundation. Following the Indian Ocean Tsunami of 2004, 3 customised courses on disaster preparedness and response, funded by Singapore’s Ministry of Foreign Affairs, were specially conducted for health officials from 2 of the Tsunami-affected countries, Sri Lanka and the Maldives.

Remaining Relevant and Responsive

Moving forward, a continuing challenge will be to ensure that what is taught in the MPH programme and short courses remains relevant and responsive to the challenges that future Public Health graduates will face. Ideally, academic content needs to be grounded in real-world experience, while validated field experience needs to be translated into new academic knowledge – creating a

Table 2a. Public Health Graduates 1953-2006

No.	Country	DPH/MSc(PH)/ MMed(PH)	MSc(OM)/ MMed(OM)	Number
1	Bangladesh	7	1	8
2	India	-	1	1
3	Brunei	5	1	6
4	Cambodia	2	1	3
5	China	2	-	2
6	Fiji/Tonga	1	-	1
7	Hong Kong	62	12	74
8	India	4	2	6
9	Indonesia	42	56	98
10	Iran	1	0	1
11	Japan	1	0	1
12	Kenya	-	2	2
13	Malaysia	110	73	183
14	Mauritius	-	9	9
15	Myanmar	55	32	87
16	Nepal	2	1	3
17	Nigeria	1	2	3
18	Pakistan	2	6	8
19	Papua New Guinea	3	-	3
20	Philippines	15	13	28
21	Romania	1	-	1
22	Seychelles	-	2	2
23	Singapore	156	56	212
24	South Africa	-	1	1
25	South Korea	6	2	8
26	South Yemen	-	1	1
27	Sri Lanka	1	5	6
28	Taiwan	1	-	1
29	Tanzania	1	2	3
30	Thailand	17	18	35
31	Tonga	-	1	1
32	Uganda	2	1	3
33	Vietnam	2	5	7
34	Zimbabwe	-	1	1
35	Data Missing	24	-	24
Total		526	307	833

virtuous circle that continuously feeds knowledge discovery into knowledge dissemination.

Presently, a number of faculty members are actively engaged in field research and public health practice in developing countries as consultants to the WHO, the World Bank and other agencies, working on issues ranging from health services development and quality of healthcare, to occupational health and HIV prevention. Teaching collaborations involving overseas guest lecturers with extensive field experience are another way we are filling the gap, especially in content areas where local expertise is less developed.

Admittedly, while Singapore's strength lies in its experience and expertise in urban health, a major shortcoming in its effort to be a regional educational and training hub in public health is the lack of a rural context for

Table 2b. Short Courses Conducted by COFM Department, Yong Loo Lin School of Medicine (1992-2006)

	Country	Number
1.	Angola	1
2.	Bahrain	2
3.	Bangladesh	10
4.	Bhutan	3
5.	British	1
6.	Brunei	25
7.	Burkina Faso	1
8.	Bulgaria	1
9.	Cambodia	15
10.	Cameroon	1
11.	China	16
12.	Cote D'voire	1
13.	Cyprus	2
14.	Djibouti	1
15.	Eritrea	1
16.	Hong Kong	11
17.	India	10
18.	Indonesia	13
19.	Jordan	2
20.	Kenya	1
21.	Kiribati	1
22.	Lao Pdr	8
23.	Lebanon	1
24.	Malaysia	14
25.	Maldives	1
26.	Malta	1
27.	Mauritius	2
28.	Mexico	3
29.	Mongolia	8
30.	Myanmar	54
31.	Namibia	1
32.	Nepal	10
33.	Nigeria	1
34.	Pakistan	11
35.	Palau	1
36.	Philippine	8
37.	Samoa	3
38.	Senegal	1
39.	Seychelles	1
40.	Sierra Leone	1
41.	Singapore	761
42.	Sri Lanka	3
43.	Sudan	1
44.	Tanzania	1
45.	Thailand	4
46.	Tonga	2
47.	Vietnam	28
48.	Zambia	1
Total		1050

training in rural health systems. On the other hand, Singapore's strategic location in Southeast Asia means the "field" is literally at its doorstep—an opportunity to be exploited through the forging of strategic partnerships with our neighbours. Indeed, at the time of writing, a Global

Health specialisation track has been incorporated into the MPH programme starting with the 2008/2009 intake.

Conclusion

In the absence of a formal school of public health, existing resources in a conventional medical school can be tapped to mount a creditable degree programme to prepare effective public health leaders for the challenges faced. Moreover, as our experience demonstrates, reaching out with short training courses that strategically target country-specific public health issues is a viable and constructive approach to bridging the widening resource gap between the developed and developing worlds. Given that even developed countries face resource constraints of their own, and therefore no country can by itself undertake the urgent task alone, the way forward would logically be for the world's public health training institutions to pool their capacity building resources and leverage on each others' complementary strengths so as to strengthen public health systems around the world.

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