

# 8 *Health Workforce*

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## 8.1 Introduction

This chapter explores how the Malaysian health workforce evolved over a 60-year period. It analyses the dynamic interactions between various forces in the health system and explores how broader societal elements such as education levels and economic growth; evolving epidemiological, demographic and behavioural patterns; and macroeconomic policies contributed to the dynamic interactions and influenced the subsequent outcomes for the health system.

This chapter does not attempt to provide a detailed profile of the Malaysian health workforce, as such information is available on the websites of the Malaysian Ministry of Health (MoH) (Ministry of Health Malaysia, 2016b) and the World Health Organization (WHO) (World Health Organization, 2014).

## 8.2 Post-independence: The Early Phase (1960s and 1970s) – Focus on Improving Access

During the years immediately after independence, the Malaysian population was largely rural and had relatively low literacy and high rates of maternal and infant mortality, vaccine-preventable diseases, malaria, tuberculosis, water- and soil-borne disease and malnutrition (see Chapter 3). The economy was doing well, with a steadily increasing gross domestic product (GDP). Guided by strong political considerations, the government implemented policies for rapid integrated rural development, focusing on infrastructure, education and healthcare (see Chapter 3). A nationwide rural health service developed rapidly (see Chapter 4), together with vertical disease control programmes for malaria, tuberculosis, filariasis, yaws and various food-, water- and soil-borne diseases (Chapter 6). Community mobilisation was a key feature of the development process. Table 8.1

Table 8.1 Summary of interacting influences on the evolution of the health workforce, 1960s and 1970s

	Population behaviour and demographic profile	Morbidity and mortality profile	Economy and macro policies
Socio-economic ecosystem	Largely rural population Low literacy Low health literacy	High rates of <ul style="list-style-type: none"> <li>• maternal and infant mortality</li> <li>• vaccine-preventable diseases</li> <li>• malaria</li> <li>• tuberculosis</li> <li>• water- and soil-borne diseases</li> <li>• malnutrition</li> </ul>	Steady increase in GDP Rapid integrated rural development
	Health services	Education sector	Governance and financing
Health and education sectors	Development of rural health service and vertical disease control programmes Demand for staff for maternal and child healthcare (MCH), disease control and sanitation Competence for community mobilisation for health	Rapid expansion of primary and secondary schools Rising education level of school leavers	Production of health personnel <i>only</i> in public sector Policy to focus on training of nurses, midwives, medical assistants and public health assistants, and less emphasis on producing doctors
	Production of health workforce	Health workforce: key features	Outcomes
Health workforce	Rise in training institutions in MoH Rapid production of basic allied health staff Standardised management protocols; supervisory training	Comprised of public and private sector providers Rapid increase in public sector health workforce, particularly nurses and midwives	Increased access to and use of basic health services in rural communities

**Box 8.1** Key features of the rapid production of allied health personnel

1. Basic pre-service courses were of 1–3 years' duration.
  - a. The WHO and international agencies provided assistance for developing basic curricula, training trainers and establishing standards for qualifying exams, thereby contributing to quality standards.
  - b. All health programmes delivered through the rural health service had standardised clinical and management protocols and standard packages of equipment and drugs. Frequent in-service training ensured that all staff acquired competence in these protocols.
  - c. The training incorporated basic concepts of community mobilisation. This subsequently enabled rural health staff to recruit from village development committees in health projects, particularly for sanitation, immunisation and safe motherhood.
2. Some of the more competent and experienced staff received additional training in supervisory techniques and became supervisors who lived and worked close to the front-line staff.

summarises key drivers shaping the development of the workforce at this time.

The rapidly expanding rural health programmes needed large numbers of healthcare workers close to rural communities. The interventions they needed to deliver were not too technically complex. The MoH concentrated on rapidly producing large numbers of allied health personnel (mainly nurses of different categories) to populate the rural health services. At this juncture, the government did not attempt to rapidly increase the number of doctors (Table 8.2). Several considerations underpinned this policy. First, entry competence for basic training was lower for allied health personnel than for doctors, so allied health candidates were more readily available, given the literacy levels at that time. Additionally, allied health personnel were more affordable. The challenge was to ensure the production of sufficient numbers of health personnel

**Table 8.2 Production of allied health personnel (selected categories), 1956–1995**

Category	1956–1965	1966–1975	1976–1985	1986–1995
Nurse	2,900	3,350	5,200	9,900
Community nurse	n.a.	n.a.	1,229	1,794
Assistant nurse <sup>1</sup>	2,000	2,152	3,800	1,800
Midwife <sup>1</sup>	n.a.	790	1,700	180
Medical assistant	No intake yet	899	1,137	1,913
Health inspector	No intake yet	68	866	791
Public health assistant	30	143	355	810
Pharmacist assistant	No intake yet	200	746	930
Radiographer	49	192	224	338
Medical laboratory technologist	No intake yet	No intake yet	853	907
Medical laboratory assistant	110	469	720	80
Physiotherapist	No intake yet	22	129	184
Occupational therapist	No intake yet	No intake yet	41	141
All	5,089	8,263	17,000	19,768

Source: Suleiman and Jegathesan, 2000.

<sup>1</sup> Phasing out.

n.a. – not available

with the skills and competence to provide safe and effective care. To address this, training institutions for allied health personnel were placed under the control of the MoH rather than in universities under the Ministry of Education (MoE). At that time, the sentiment was that universities were too distant from the front-line of healthcare delivery and would focus on academic measures of excellence rather than the practical skills needed at the front-line. Box 8.1 summarises the critical features of the training programmes. Training institutions were confined to the public sector, enabling the MoH to co-ordinate production with subsequent employment and deployment in the rapidly expanding public sector services. Another feature was that domestic funding, and not

foreign aid, supported the training programmes. Foreign assistance was mainly of a technical nature (Box 8.1).

Training programmes expanded rapidly for allied health personnel, namely midwives and health nurses (for MCH and nutrition), public health overseers and health inspectors (for environmental sanitation), and medical assistants and pharmacy assistants (for treating common illnesses) (Table 8.2).

In contrast, during this phase of development, the production of doctors, dentists and pharmacists was limited. For example, during the 20-year period 1955–1975, the number of nurses and assistant nurses/midwives increased at a much faster rate than that of doctors (Table 8.3).

**Table 8.3** *Evolution of the composition of the health workforce (selected categories) 1955–2015*

Category	1955 <sup>1</sup>	1974/1975	1995	2015
Doctor	736	2,374	9,608	46,491
Pharmacist	n.a.	52	1,537	10,511
Medical assistant/assistant medical officer	1,075	1,379	4,261	14,724
Nurse	1,065	3,963 <sup>2,3</sup>	1,3647 <sup>2</sup>	99,925
Assistant nurse and midwife	1,132	4,740 <sup>2,4</sup>	5,495 <sup>2</sup>	25,175
Sanitary engineer	0	5	n.a.	n.a.
Sanitary inspector/health inspector/assistant environmental health officer	168	398 <sup>2</sup>	1,425	4,517
Assistant health inspector	n.a.	526 <sup>2,3</sup>	n.a.	n.a.
Medical laboratory technologist	n.a.	428 <sup>2</sup>	1,698	6,324 <sup>5</sup>
Laboratory technician	78	542 <sup>2</sup>	980	
Occupational therapist	n.a.	n.a.	n.a.	1,054
Physiotherapist	n.a.	n.a.	n.a.	1,361

*Sources:* Government of the Federation of Malaya, n.d.; World Health Organization, 1977; Ministry of Health Malaysia, 1995a; 1995b; 2016b.

<sup>1</sup> Excludes Sabah and Sarawak.

<sup>2</sup> Government only.

<sup>3</sup> Excludes Sabah.

<sup>4</sup> Data for 1974.

<sup>5</sup> Public sector only: data for 2013.

n.a. – not available

Courses that provided the basic qualification for doctors were available only in three local universities, and the number of places was severely limited. No post-graduate training was available, and there was a limited number of scholarships for specialist training in foreign countries (mostly in the UK). During these earlier years, expatriate staff on short-term contracts filled key vacancies in medical officer and specialist positions until local staff became available and replaced them.

As a result of the rapid recruitment and training of nurses and midwives, the number of people per nurse/midwife declined about four-fold from 2,488 in 1964 to 570 in 1980 (see Chapter 3: Supplementary Table 3.L). The number of people per doctor also declined by about half from 7,145 in 1960 to 3,563 in 1980 (see Chapter 3: Supplementary Table 3.K).

Several governance mechanisms controlled the quality of health personnel (World Health Organization, 2014). First, legislation mandated that qualified personnel in core categories such as doctors, dentists, pharmacists, nurses and midwives had to be licensed to practice and were placed on registers. This served to control unqualified, illegal practitioners. Second, as the public sector was by far the largest employer of health personnel, their employment conditions were governed by civil service rules and regulations that also defined their financial and non-financial benefits such as medical care, travel subsidies, highly subsidised housing, employment security and pension benefits. Thus the public sector was able to control the composition and quality of the health workforce.

The health system outcomes relevant for assessing this early phase of development include availability of and access to health staff, utilisation of services, and selected mortality and morbidity indicators closely associated with the performance of the health workforce. Data for nurses/midwives suggests that increased availability was associated with utilisation and health status (Table 8.4) (trend data for other categories were not available).

### 8.3 The Second Phase of Development (1980s–1990s)

Several overarching features influenced development during the 1980s and 1990s. Rapidly rising female literacy and rural-to-urban migration contributed to the evolving morbidity and mortality patterns (see Chapter 3). Communicable diseases (CDs) declined, while non-

Table 8.4 Selected health staff, utilisation rates and health outcomes

	Maternal mortality ratio (MMR)	Live births per midwife <sup>1</sup> (LB)	Percent births with skilled attendance	Number of people per nursing staff <sup>2</sup>	% infants with DPT3 immunisation <sup>3</sup>	Incidence of diphtheria
1961	200	320	41	2488	n.a.	
1970	148	149	67	1879	15	11.10 <sup>4</sup>
1980	63	101	n.a.	570	72	0.97
1990	20	102	89	481	92	0.05

Sources: Calculations by the author derived from data from Pathmanathan et al. (2003) and Suleiman and Jegathesan (2000).

<sup>1</sup> Includes nurse-midwives and certified trained midwives.

<sup>2</sup> Includes nurses, assistant nurses, midwives and community nurses.

<sup>3</sup> Diphtheria, tetanus and pertussis.

<sup>4</sup> In 1975.

n.a. – not available

**Box 8.2** System observations: stocks and flows of personnel

Stocks and flows explain inertia in a system; that is, the delay between actions and their outcomes. The importance of this systems thinking concept to health system strengthening is perhaps most clearly seen in human resources due to the length of time required to train medical personnel and the number of personnel that can be trained at any one time (flows). Such considerations contributed to the choice to emphasise the production of allied health personnel over doctors (and task shifting) in the early stages of the Malaysian health system. System inertia is also seen in the pool of existing personnel (stocks). Indeed, medical personnel may be part of a health system for decades, enabling and constraining health strategies and imposing financial obligations on the health system.

communicable diseases (NCDs) became more common (see Chapter 6). As long-established vertical disease control programmes (malaria, tuberculosis, leprosy) merged with primary care (Chapter 4), their staff were absorbed and, where necessary, re-trained to provide a broader range of services. Larger hospitals that offered treatment facilities were overcrowded while smaller district hospitals were underutilised, catering mainly for normal childbirth and ambulatory care for less complex conditions (Public Health Institute, 1983). The bypassing of clinics and district hospitals by patients in favour of larger or more sophisticated facilities for inpatient and ambulatory care was a significant pattern in health care utilisation at this time (Chapter 5). This phenomenon illustrated the growing demand for higher levels of clinical and technical services that came with rising socio-economic and educational status in the population. Table 8.5 summarises the interactions that influenced the evolution of the health workforce at this time.

Staff with higher levels of competence were needed. Several new categories of personnel were recruited. For example, public health engineers were recruited to complement health inspectors (Chapter 7) and pharmacists to complement pharmacy assistants (Chapter 10).

Categories of staff such as nurses, medical assistants and health inspectors attending training programmes in the public sector received



Table 8.5 Summary of interacting influences on the evolution of the health workforce, 1980s and 1990s

	Population behaviour and demographic profile	Morbidity and mortality profile	Economy and macro policies
Larger ecosystem	<ul style="list-style-type: none"> <li>• Increased rural–urban migration</li> <li>• Rapid rise in female literacy</li> <li>• Good access to basic services, and demand for more sophisticated clinical care</li> </ul>	<ul style="list-style-type: none"> <li>• Decline in CDs</li> <li>• Rise in NCDs</li> </ul>	<ul style="list-style-type: none"> <li>• Budget constraints</li> <li>• Private sector as engine of growth</li> <li>• Improve efficiency to counter budget constraints</li> <li>• In the public sector, nationwide quality improvement initiatives</li> <li>• Address imbalance between regions</li> <li>• Poverty reduction programmes</li> </ul>
	Health services	Education sector	Governance and financing
Health and education sectors	<ul style="list-style-type: none"> <li>• Provision of more complex services:               <ul style="list-style-type: none"> <li>o clinical</li> <li>o technical</li> </ul> </li> <li>• Improved management aimed at better quality and efficiency</li> <li>• Increase in private sector clinics and hospitals in response to public demand</li> </ul>	<ul style="list-style-type: none"> <li>• Better-qualified candidates demanding tertiary education</li> <li>• Expanded tertiary education including local production of doctors and various allied health professionals</li> <li>• Increasing demand for medical education</li> </ul>	<ul style="list-style-type: none"> <li>• Allow production in the private sector of selected categories of personnel</li> <li>• Increase in scholarships for training in foreign institutions</li> </ul>

	Production of health workforce	Health workforce: key features	Outcomes
Health workforce	<ul style="list-style-type: none"> <li>• Transfer of MoH training institutions to MoE (universities and colleges)</li> <li>• Rapid increase in private sector training institutions</li> <li>• Strengthened governance structure (Malaysian Qualifications Authority (MQA))</li> </ul>	<ul style="list-style-type: none"> <li>• Brain drain from public to private sector</li> <li>• Upgrading of entry levels and exit competencies of pre-employment training</li> <li>• Employment of higher-level categories of staff</li> <li>• Improved management skills</li> <li>• Efforts to redress geographic imbalances</li> </ul>	<ul style="list-style-type: none"> <li>• Disparities between geographic regions for access to care were reduced</li> </ul>

living allowances and accommodation during their training period. The health personnel training programmes profile of 1975 provides an insight into the evolutionary process of the workforce. The training of nurses and assistant nurses was at a peak; midwives were being converted into community nurses, health inspector training was upgraded and pharmacist training had just begun (Table 8.6).

Meanwhile, growing prosperity encouraged the growth of private sector healthcare. This was associated with the continuing challenge of the brain drain of doctors, particularly those who

**Table 8.6 Profile of health worker training programmes**

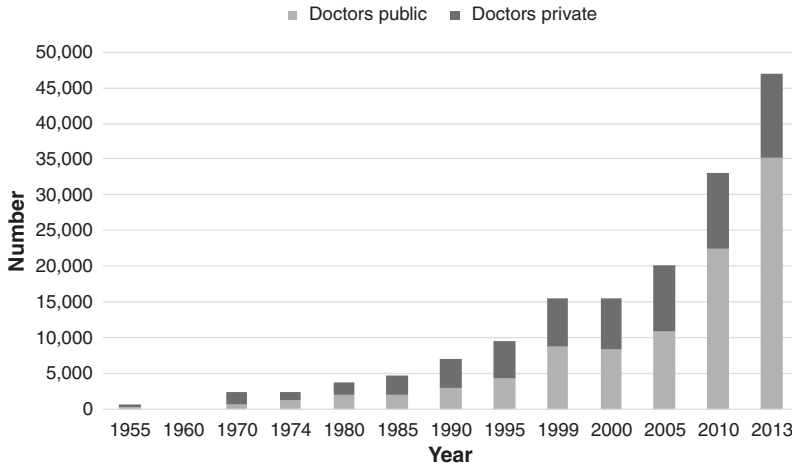
Category <sup>1</sup>	Programme duration (years)	Schools (no.)	Expected annual output
Medical doctor	5	2	250
Pharmacist	4	1	Intake of 50. No output yet
<b>Nursing professions</b>			
Staff nurse	3	9	570
Assistant nurse	2	23	583
Midwife	2	16	205
Community nurse (basic course)	2	2	No output yet
Community nurse (conversion course) <sup>2</sup>	0.5	3	108
<b>Other health worker</b>			
Hospital assistant	3	2	166
	1 (existing)	1	58
Health inspector <sup>3</sup>	3 (new)	1	No output yet
Radiographer	2	1	21
Physiotherapist	3	1	4

Source: Ismail & Martinez, 1975.

<sup>1</sup> Universities provided training of medical doctors and pharmacists as a degree programme; training of nursing professionals and other health workers was via an MoH certificate programme.

<sup>2</sup> For trained, certified midwives to enable them to perform a wider role.

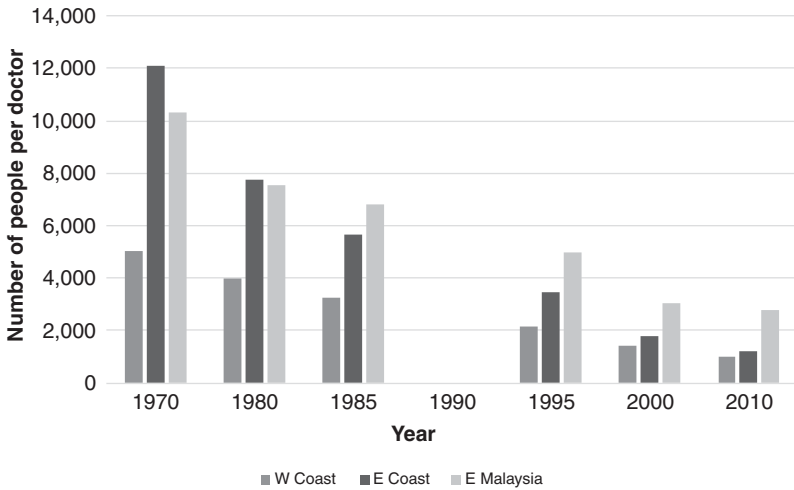
<sup>3</sup> In 1975, two types of training programme for health inspectors co-existed as the training was transitioning from the one-year programme, which was being phased out, to the new three-year programme.



**Figure 8.1** Malaysian doctors in the public and private sectors, 1955–2013. Sources: Calculations by the author derived from data from the Ministry of Health Malaysia (1971; 1974; 1982; 1983; 1984; 1986; 1995a; 2000; 2010) and the Government of the Federation of Malaya (n.d.).

were more experienced and specialist, from the public sector to the private sector (Ministry of Health Malaysia, 2016b). Although the production of doctors increased during the 1980s and 1990s, a sizeable proportion moved from the public to the private sector after the mandatory period of public sector service. Thus the ratio of public-to-private sector doctors remained about 50:50 (Figure 8.1). According to an analysis by Hameed Musafar (2014), the major contributory factors of this brain drain were the slowing of wage growth in the public sector combined with the rapid increase of private hospitals and beds, where doctors had better remuneration and working conditions.

The shift of doctors from the public to the private sector also created regional disparities. The West Coast states of Peninsular Malaysia experienced much faster socio-economic development than the East Coast states and the states of Sarawak and Sabah<sup>1</sup> (see Chapter 3), thus private sector healthcare was concentrated in the West Coast states, where patients could pay for these services (Figure 8.2). Consequently, the health sector faced the dual challenge of addressing brain drain to the private sector and inequitable access to healthcare between the regions.



**Figure 8.2** Regional disparities in availability of doctors, 1970–2010.

Sources: Calculations by the author derived from data from the Ministry of Health Malaysia (1971; 1974; 1982; 1983; 1984; 1986; 1995a; 2000; 2010) and the Government of the Federation of Malaya (n.d.).

Several policy responses targeting health sector development emerged to address these challenges. One was the national drive to balance the inequitable development that had seen the West Coast states progress much faster than the other states (Prime Minister's Department, n.d.b). Faster development of the less-developed states was expected to facilitate the growth of the private sector, including the private healthcare sector. Another policy was to improve managerial skills in the public sector for better efficiency (obtaining more and better outputs for the inputs) (Prime Minister's Department, n.d. a). Better in-house personnel management was expected to address some of the frustrations of the higher-level categories in the public hospitals. A third approach was to leverage the scarce resources of skilled clinical specialists in the public sector by upgrading the competencies of healthcare workers and encouraging the adoption of a team approach by clinical specialists working together with other categories of healthcare workers. Internal MoH policies on staff placement continually struggled to increase numbers in the less-developed states. These policies resulted in changes in the health workforce profile.

Clinical competencies were upgraded through curricula changes. Some allied health professional categories were upgraded to acquire broader competencies and better remuneration, while others were phased out (Box 8.3). Simultaneously, nursing training was broadened and opened to private sector training institutes. These strategies resulted in a rapid increase in the nursing workforce. As a result, the number of people per nursing personnel was reduced from 1,879 in 1970 to 481 in 1990 (Table 8.7).

The local production of physiotherapists, occupational therapists and radiographers also increased rapidly (Table 8.2). Improved school enrolment and positive discrimination measures enabled rural students to acquire secondary education and resulted in larger numbers of better-qualified candidates for these courses. To improve managerial efficiency, doctors who occupied managerial positions at district and state levels received specialist post-graduate training in public health, while those with managerial positions in hospitals attended purpose-designed in-service management courses (Box 8.3). The establishment of new medical schools accelerated the production of doctors (Table 8.3); specialist training for doctors and for nurses was enhanced.

Various measures were introduced to redress the geographic imbalance in distribution (e.g. special allowances and housing, access to specialist training) and also to stem the brain drain to the private sector (e.g. compulsory public sector service for specified periods). However, as illustrated in Figure 8.1, the proportion of doctors in the public and private sectors did not change until the end of this period. The flow to the private sector was merely contained and not reversed. Also,

**Table 8.7** *Number of people per doctor and per nursing staff, 1970–2000*

Year	People per staff			
	1970	1980 <sup>1</sup>	1990	2000
Nursing personnel	1,879	570	481	599
Doctors	4,263	3,800	2,553	1,490

*Source:* Calculations by author based on data from MoH annual reports from various years.

<sup>1</sup> Data from Suleiman and Jegathesan (2000).

**Box 8.3** Examples of key initiatives to upgrade health staff competencies during the 1980s and 1990s

### **Allied Health Personnel**

- Rural midwives were converted to community nurses.
- Junior hospital assistants were replaced by medical assistants.
- Medical laboratory assistants were replaced by medical laboratory technologists.
- Trained nurses were given in-service training to become health staff nurses.
- Curriculum for health inspectors was upgraded and converted from a one-year to a three-year programme that included competency-based practical training.
- Nurse training included a strong management component.
- Local production of physiotherapists and radiographers was expanded.
- Training of health education officers was initiated in the MoH and subsequently transferred to universities.

### **Doctors and Other Professional Staff**

- Doctors and relevant teams were given in-service training in hospital management.
- This training included team training in conducting local-level research and using such information for decision-making (health systems research) and quality improvement (see Chapter 10).
- Post-graduate training in local universities was established for several specialities for doctors.
- Post-graduate training in public health for doctors and engineers included strong management components.

Notable: Most courses included strong components of:

- Cultural and behavioural determinants of health and health-seeking behaviour.
- Practical exercises that enhanced the appreciation of how such determinants applied in the Malaysian context.

although the availability of doctors improved steadily, the gap between the West and the East Coast states of Peninsular Malaysia narrowed only after 1995, while the gap with East Malaysia remains challenging even today (Figure 8.2).

Systemic factors driving individual and collective choices have contributed to the persistence of the gap. Doctors in East Malaysia face more difficulties in accessing facilities such as education for children and entertainment, as well as distance from extended families (Ministry of Health Malaysia, 2016b). Additionally, both public and private hospitals are in places with higher population density for economies of scale; with doctors and medical staff of other higher categories concentrated in hospitals, the pursuit of efficient resource use inadvertently contributes to inequalities. Finally, private hospitals are concentrated in more prosperous regions, where the community has the ability to pay for services. These factors jointly create conditions for the inequitable distribution of human resources, and especially of doctors.

The challenges of regional inequalities notwithstanding, overall access to healthcare has increased, with a significant proportion of this increase resulting from private sector expansion (Table 8.8), and utilisation has increased along with access (Figure 8.3).

**Table 8.8 Access to health facility (with doctor, medical assistant or community nurse)**

Percent within 3 km of nearest facility	1986 <sup>1</sup>	1996 <sup>1</sup>
	Population	Living quarters
Public <sup>2</sup>	24	50
Private <sup>3</sup>	18	80
Both	32	
Peninsular Malaysia	74	89
Sarawak	n.a.	48
Sabah	n.a.	66
All		81

Sources: Institute for Public Health, 1986; 1996.

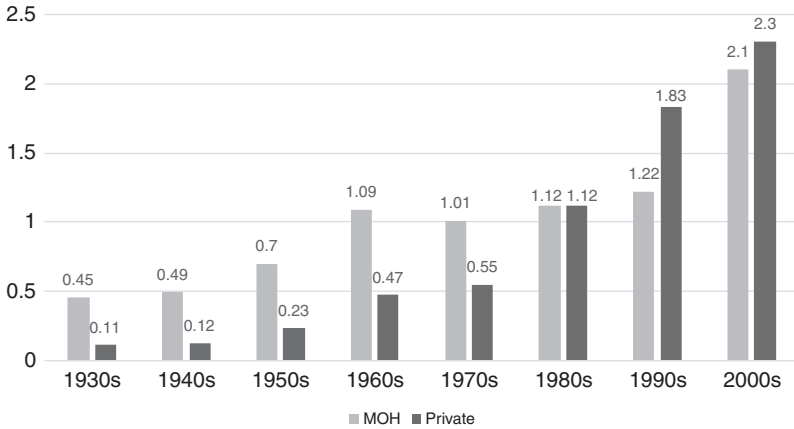
<sup>1</sup> Peninsular Malaysia only in 1986; including states in Borneo in 1996.

<sup>2</sup> Staff might have been a community nurse, medical assistant or doctor.

<sup>3</sup> Staff was a private medical doctor.

n.a. – not available





**Figure 8.3** Utilisation of outpatient services in Malaysia.

Source: Reproduced from Health Policy Research Associates et al. (2013).

#### 8.4 The Third (Most Recent) Phase of Development (2000s through to 2017)

After the turn of the century, macroeconomic policies focused on achieving ‘developed country status’ by 2020, which included eradicating poverty and redressing imbalances, building a knowledge-based society and strengthening human resource development with higher levels of knowledge, technical and thinking skills (Economic Planning Unit, n.d.). Globalisation and information communication technology increased, as did urbanisation (62% in 2000) (Department of Statistics, 2001). Lifestyles changed, particularly in relation to food and exercise habits (Lim, 2016; Koh et al., 2015), and migration increased (an estimated 0.23% of the population) (Department of Statistics Malaysia, 2019), with a sizeable proportion of undocumented migrants. All these forces impacted on the health status of the community (see Chapter 3). While the prevalence of NCDs was rising rapidly, some CDs re-surfaced (tuberculosis and dengue) while new threats emerged (HIV/AIDS, severe acute respiratory syndrome (SARS)) (see Chapter 6). Meanwhile, public expectations of health services also increased, influenced not only by rising economic and education levels but also by readily accessible information through electronic connectivity (see Chapter 3).

Medical technology in clinical, imaging and laboratory sciences developed rapidly, bringing with it demands for more varied and higher levels of competencies in the health workforce. These demands on the health services were mirrored by demands from the health workforce for better recognition, higher levels of education and better wage scales. Table 8.9 illustrates how different socio-economic changes at that time influenced the evolution of the health workforce.

A confluence of pressures from socio-economic forces, population behaviour, technological advances, and demands from health service delivery and the health workforce resulted in changes in three related but distinct developments in human resources for health, namely:

1. Basic (pre-employment) education programmes for health and allied health professionals increased their entry requirements and became more focused on achieving defined exit competencies, replacing the earlier implicit and often vague academic standards. A wide range of education programmes for health personnel that hitherto had been under the purview of the MoH were transferred to universities and colleges under the purview of the MoE so that they could have diploma- or degree-level qualifications that commanded higher remuneration packages.
2. A wider range of categories of health personnel, particularly allied health personnel, was produced and employed. By 2014, there were 31 categories of allied health professionals employed by the MoH (Ministry of Health Malaysia, 2016b). They required relevant governance mechanisms (qualification standards, practice regulations, remuneration packages, career pathways) (World Health Organization, 2014).
3. Demand for specialists increased, bringing with it challenges in ensuring standards of quality, appropriate remuneration, distribution and access. This in turn gave rise to the need for managing standards for quality (specialist registers, accreditation, credentialing and continuing education) and remuneration packages (World Health Organization, 2014).

Dichotomies between the health and education sectors and between the public and private sectors in education and health were major structural challenges that affected all the above three aspects of development, which in turn constrained health service delivery. The education sector produced health personnel, while the health sector utilised

**Table 8.9 Summary of interacting influences and the evolution of the health workforce, 2000s and 2010s**

	Population behaviour and demographic profile	Morbidity and mortality profile	Economy and macro policies
Larger ecosystem	<ul style="list-style-type: none"> <li>• Growing urban population with changing lifestyle around food and physical activity</li> <li>• High social connectivity (electronic and mobile phone) and globalisation</li> <li>• Ever-increasing health literacy, misconceptions and expectations</li> <li>• Increasing migrant labour force (many undocumented)</li> </ul>	<ul style="list-style-type: none"> <li>• Epidemic of NCDs (hypertension, diabetes)</li> <li>• Re-emerging CDs (tuberculosis, dengue) and emerging CDs (HIV/AIDS, etc.)</li> <li>• Increased awareness of problems of mental health, ageing, environment and need for rehabilitation and long-term care</li> </ul>	<ul style="list-style-type: none"> <li>• Building knowledge-based society</li> <li>• Strengthening human resource development with higher levels of knowledge, technical and thinking skills</li> <li>• Rapidly increasing demands on limited public funds</li> <li>• Health tourism as an income-generating activity</li> </ul>
Health and education sectors	<p>Health services</p> <ul style="list-style-type: none"> <li>• Rapid increase in private hospitals and facilities – with changing focus to include profit motives</li> <li>• Increased demand for, and rapid increase of, specialist services both public and private</li> <li>• Efforts in public sector to improve equitable access to more sophisticated services to meet more complex disease picture</li> </ul>	<p>Education sector</p> <ul style="list-style-type: none"> <li>• Continued high demand for tertiary education</li> <li>• Policy to establish Malaysia as an international education hub</li> <li>• Political pressures to increase educational opportunities by relaxing standards and governance mechanisms</li> </ul>	<p>Governance and financing</p> <ul style="list-style-type: none"> <li>• Failure of information and coordination systems between education and health sectors resulting in excessively rapid production of new graduates</li> <li>• Belated application of governance and financing measures to cool excessively rapid production</li> </ul>

- Continued emphasis in the public sector on:
  - o client satisfaction
  - o effective outcomes of care
- Equitable access, particularly for lower socio-economic groups

	Production of health workforce	Health workforce: Key features	Outcomes
	<ul style="list-style-type: none"> <li>• Rapid increase in public and private training institutions and foreign training</li> <li>• Inadequate monitoring and enforcement of quality control measures in tertiary education</li> <li>• Rapid increase in new graduates of varied quality seeking pre-registration training and subsequent employment (consequent to rapid increase in output of training facilities)</li> <li>• Insufficient clinical training facilities and experienced clinical supervisors for training</li> </ul>	<ul style="list-style-type: none"> <li>• Continued brain drain from public to private sector, especially of experienced senior staff</li> <li>• Improved benefits packages to retain specialist doctors and support better deployment</li> <li>• Unanticipated increase in new graduates exceeded the absorption capacity of the health system</li> <li>• Rapid increase in types and numbers of allied health professionals to meet the demands of increasingly diverse and specialised services</li> </ul>	<ul style="list-style-type: none"> <li>• Satisfaction with care providers was good (for public and private clinics)</li> <li>• Outcomes of care for some conditions was good, while quality was less than expected for conditions requiring long-term follow-up</li> </ul>
Health workforce			

them. There was a dichotomy in the vision and motivations of education and health between the public and private sectors. In both education and health, the public sector focused on societal expectations within tightly controlled budgets and the private sector on commercially viable and competitive enterprises. Box 8.4 summarises the Malaysian experience.

**Box 8.4** Malaysian experiences on moving basic training of health personnel from the health to the education sector

**Positive**

- Establishment of the MQA with adequate legislative, administrative and financial authority to regulate quality of tertiary education.
- Good co-ordination mechanism between health and education specialists for setting criteria and standards for curricula based on competencies required in the health service and for approving training programmes.
- Standardised system for recognition of qualifications linked to remuneration in the public sector.

**Negative**

The education sector at that time had only one teaching hospital, and all other universities depended on MoH clinical facilities for clinical teaching, resulting in too many students for the available resources.

The strategic planning mechanism for human resources for health in the MoH was dismantled, and there was a lack of clarity regarding responsibility for strategic planning for the health sector as a whole.

As a result:

- There was poor information exchange between the education and health sectors.
- Intakes to education programmes outstripped the capacity of the health sector to provide clinical and practical training, which were almost entirely in the MoH.

- The health sector was unable to absorb the graduates of training programmes in medicine, nursing, dentistry and pharmacy at the pace they were being produced.
- Political and commercial factors drove extremely rapid growth of programmes offering diplomas and degrees in health sector disciplines, undermining the quality control measures and resulting in varied quality of graduates.

Sources: World Health Organization, 2014; Buchanan, 2015; Hambali, 2015.

**Basic (pre-employment) training.** The training of almost every category of allied health professional was upgraded to college or university level and therefore transferred out of the MoH to the MoE. Within the MoH, structural re-organisation resulted in the MoH changing its focus from strategic planning for the entire health sector to merely planning for its own workforce. Thus a strategic vision for human resource development for health was forfeited. Existing training institutions were re-vamped to become research institutions under the umbrella of the new National Institutes of Health (NIH).

Meanwhile, in the education sector, the number of training programmes for health personnel expanded at an explosive rate, driven by demand from the public as well as by commercial and political forces (Ministry of Health Malaysia, 2016b). Additionally, there was an increase in graduates returning from foreign training programmes, many of them funded by scholarships from the public and private sectors. The demand for nursing had escalated with the growth of hospitals in the private sector as well as demand from other countries, particularly in the Middle East, while the unmet demand for medical doctors was a long-standing issue. The quality of graduates varied greatly (Noorliza et al., 2012). This was particularly apparent in nursing and medicine. The health sector had inadequate capacity to absorb the rapidly increased number of new graduates, with insufficient public health service posts to provide placements for the requisite pre-registration and supervised training of doctors (house officers (HOs)), dentists and pharmacists. Meanwhile, the private sector health services were unprepared to employ fresh, inexperienced nursing graduates. The illustrative case study in this chapter explores the dynamics and

impact of the structural challenge in relation to the production and utilisation of medical doctors.

Two underlying systemic issues contributed to the genesis of the problems. Medical, dental and pharmacy education programmes are relatively long (4–6 years). Hence there is a significant time lag between entry into training programmes and graduates seeking entry into the workforce. There was no institutional mechanism for regular timely exchange of critical information between the education and health sectors that would have facilitated pro-active planning taking into account the numbers of entrants and expected graduates. Additionally, institutional mechanisms for joint strategic planning and decision-making are unstable and personality-dependent (Box 8.4) (Buchanan, 2015).

For the first time, doctors and nurses in the public sector outnumbered those in the private sector. However, a large majority of those in the public sector were younger and inexperienced, and difficulties arose in providing them sufficient supervision and guidance (Ministry of Health Malaysia, 2016b).

Several strategies were employed to address the situation, including a moratorium on the establishment of new training programmes for doctors, dentists, pharmacists and nurses; rationalising and consolidating existing programmes; and capping the annual intake in each school. Universities were encouraged to offer post-graduate training of doctors in specialist areas instead of focusing solely on basic undergraduate programmes (see Case Study 8.1 and the later sub-section on ‘Issues related to the growing trend of specialisation’). For nurses who had graduated from substandard nursing programmes, special re-training programmes were implemented in both public and private colleges. This facilitated their subsequent employability, particularly in the growing private hospital sector. Pharmacy graduates were allowed to perform their requisite pre-registration training in the private sector.

**Expansion of categories of staff.** The shift of basic training to the education sector and the establishment of the MQA served well in providing standards for training, recognition of qualifications and establishing remuneration criteria for a large and growing number of allied health professionals. By 2012, the MoH was employing 31 different categories of allied health professionals who had graduated

from accredited diploma or degree programmes in colleges and universities. Both public and private sector hospitals began to establish units and programmes that required the skills of these personnel. Practice modalities within health service delivery changed from a heavy focus on the doctor towards a team approach that reflected the growing competence levels of the allied health and other professional groups. In turn, this team approach was integrated into teaching–learning situations in human resources development.

**Box 8.5** System observations: stocks and flows of personnel

System inertia complicates decision-making, generating outcomes that under- or overshoot targets. In human resources planning in health systems, this is further complicated by different decision-making loci that shape the flows of human resources, which include education, the public and private health sectors and medical personnel. Several practices can improve the management of system inertia in human resources for health systems, including: (1) closely co-ordinated planning of service delivery strategies with human resource development strategies, (2) using a whole-pipeline approach that cuts across sectors and organisations, and (3) a robust information system that can recognise upcoming trends and needs.

**Box 8.6** Rapid and effective implementation of programmes

The Malaysian health workforce is known for its capability for rapid implementation of programmes. An outstanding recent example is the achievement of coverage of the human papillomavirus (HPV) vaccination in the eligible population of adolescent girls – within years of the programme being introduced, higher coverage had been attained than that achieved in many ‘first world’ countries (Buang *et al.*, 2018).

Who is responsible for implementing health programmes?

- Supervisory categories of nurses manage many front-line services.
- Doctors specialising in public health manage state health departments and health districts and several hospitals.



Their training includes significant emphasis on programme management. This probably contributes to the impressive capacity for rapid and effective implementation of health programmes, particularly those largely delivered through the MCH services.

Similarly, other categories of the health workforce, especially those including senior managerial positions, attend mandatory management courses designed for all civil service officers as part of their career development, while other people who occupy managerial positions in any programme in the MoH attend purpose-designed in-service courses on management.

**Continuing education.** Participation in continuing education and access to regularly updated practice guidelines is one of the strengths of the Malaysian health workforce. For those in the public sector, the employing agencies (the MoH and other ministries) organise and fund continuing education activities through the various training institutions, hospitals and the NIH. In the private sector, professional bodies take on this role, often in association with pharmaceutical agencies. The MoH also takes the lead in assembling teams of specialists to develop practice guidelines using systematic reviews and other relevant information produced by the health technology unit.

Governance structure and procedures that had served the earlier established medical, dental, nursing, medical assistant and pharmaceutical professions well were replicated to cover several newer categories (Box 8.7).

**Specialist competencies.** Healthcare services delivery required increasingly complex skills from its workforce to address the growing numbers of patients with complex and multiple disease presentations. They had to use new medical technologies that became available every year. This resulted in a trend toward specialisation, where a small section of the workforce gained much higher competencies in selected fields of medical care.

**Issues related to the growing trend of specialisation.** The number of such specialised fields is growing steadily. Table 8.9 gives examples of the fields of specialisation and the relevant governance mechanisms established to control quality and safety of practice. This growth presents the continuing challenge of producing sufficient trained personnel for each

**Box 8.7** Governance structures (legislation, boards, registration and annual licensing) to ensure quality and safety of practice of healthcare professionals

- Nursing and midwifery: since 1950 and 1966, respectively
- Pharmacists: since 1951
- Medical and dental: since 1952 and 1948, respectively
- Assistant medical officers: since 1977
- Opticians and optometrists: since 1991
- Food analysis: since 2011
- Traditional and complementary medicine: since 2013
- Allied health professionals: since 2016
- Traditional and Complementary Medicine Act: since 2016

The regulatory authority and governance structures described in detail elsewhere (World Health Organization, 2014) have served well in the past to control the practice of these professions by unqualified persons and to set standards of practice for each profession.

However, with the growing number and size of the professions, the evolution of the health system has brought to prominence the need to modernise legislation and governance structures. A recent review by Wraight (2015), a WHO consultant, recommended:

- Harmonising the regulation of all professional groups for ‘consistency of purpose to achieve consistent, transparent and fair regulation that protects the public’.
- Strengthening ‘arrangements for governance and accountability . . . and the relative autonomy of councils and boards’ (currently, all councils and boards are under the purview of the MoH, although all have elected representation from the respective professions).
- Establishing sufficiently resourced standalone secretariats with clear demarcation of the roles between the secretariats and the respective divisions in the MoH.
- Alignment of processes to establish standards, procedures, requirements and codes of conduct across all regulated professions to ensure they ‘do not compromise the Regulators’ ability to protect the public’.

This range of recommendations illustrates the challenges of responding to new circumstances.

The critical impediments are: (a) the time taken to amend legislation, with some changes taking more than 15 years, and (b) the capacity and political will required to establish standalone secretariats and clear demarcation between the roles and authority of the regulatory bodies vis-à-vis the MoH.

field and distributing them equitably in the health system. Additionally, as the number of specialities increases and the field of each specialisation narrows, particularly for doctors, there are concerns that this could lead to the management of specific manifestations of diseases and health conditions rather than holistic treatment of the patient. Team approaches mostly focus on multi-disciplinary teams of health professionals and allied health professionals but less on teams of senior clinical specialists.

Doctors and dentists undergo specialist training in university-based training programmes. However, as with basic training programmes, specialist training depends on MoH hospitals to provide the very large component of clinical and practical training. Such training requires supervision from specialists in MoH hospitals. As specialists capable of providing supervision are frequently limited in number, there is insufficient capacity to produce specialists at the rate they are needed (the case study illustrates the dynamics of this situation). Consequently, it is difficult to achieve the desired distribution between the geographic regions. Several strategies have been formulated to improve access in the face of the inequitable distribution.

This developmental process has also created new tensions. For example, nursing education has progressed from certificate-level training within the MoH to diploma and degree status in universities. However, the majority of nursing positions in the MoH, the major employer of nurses, are for certificate- or diploma-level candidates. The nursing profession continues to struggle to attain professional status commensurate with degree holders. The role of nursing degree holders in the health sector is as yet unclear, illustrated by the fact that speciality training is limited to credentialing existing nurses with experience rather than requiring further training and qualifications as is the case for doctors. Meanwhile, a dilemma arises from the need for personnel who perform the simpler tasks of bedside nursing. These tasks used to be performed by assistant nurses, a category that no longer exists. Interestingly, more 'developed' countries are eyeing

**Table 8.10 Examples of specialisation and the relevant governance mechanisms**

Category of staff	Fields of speciality training	Governance mechanism
Nurses Medical assistants (assistant medical officers)	<ul style="list-style-type: none"> <li>• Perioperative care</li> <li>• Ophthalmology</li> <li>• Emergency medicine</li> <li>• Trauma care</li> </ul>	<p><b>Credentialing</b> for two-year periods  <b>Authority:</b> MoH            Two years' prior experience in the field followed by training and demonstrated competence in specified procedures</p>
Doctors	<p>Thirty speciality areas, e.g.:</p> <ul style="list-style-type: none"> <li>• Anaesthesiology and critical care</li> <li>• Emergency medicine</li> <li>• Internal medicine</li> <li>• General surgery</li> </ul> <p>Each speciality area has a number of sub-speciality areas, e.g.:</p> <ul style="list-style-type: none"> <li>• Internal medicine has 14 sub-speciality areas such as cardiology, dermatology, endocrinology, etc.</li> <li>• General surgery has six sub-speciality areas such as breast, endocrine, colorectal etc.</li> </ul>	<p><b>Post-graduate degrees</b> that are recognised by the Malaysian Medical Council (MMC) in accordance with explicit criteria            Placement on the National Specialist Register established under the Medical Act 2012 and managed by the MMC.</p>

*Sources:* World Health Organization, 2014; National Specialist Register, n.d.

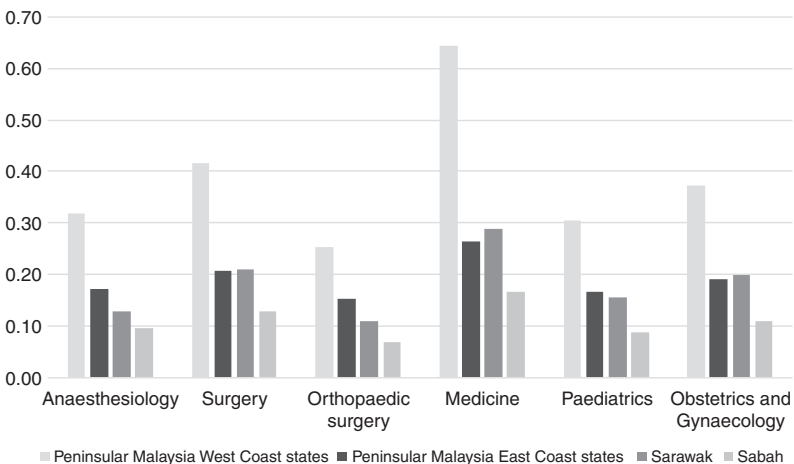
Malaysia's expertise in training assistant nurses as a possible solution to nursing needs arising in their own countries. Another issue is whether the health workforce is sufficiently prepared to address the changing epidemiological picture, with high rates of non-communicable disease together with the ability to mobilise communities to empower individuals and families to take responsibility for their health.

## 8.5 Workforce Performance

The performance of the health workforce is intimately related to its equitable distribution and utilisation, client satisfaction and quality of healthcare. This sub-section provides information on selected indicators of the performance of the workforce.

### 8.5.1 Equitable Distribution

Specialist doctors are the most expensive category of healthcare worker and the category for which equitable distribution is the most difficult to achieve. The distribution of selected illustrative key specialist doctors in 2013 was, as expected, highest in the West Coast states of Peninsular Malaysia, but there was a much smaller difference between the Peninsular East Coast states and East Malaysia (Figure 8.4).



**Figure 8.4** Distribution of selected specialist doctors in Malaysia, 2013.

Source: Ministry of Health Malaysia, 2016b.

### 8.5.2 *Utilisation: Level of Utilisation and Equitable Utilisation*

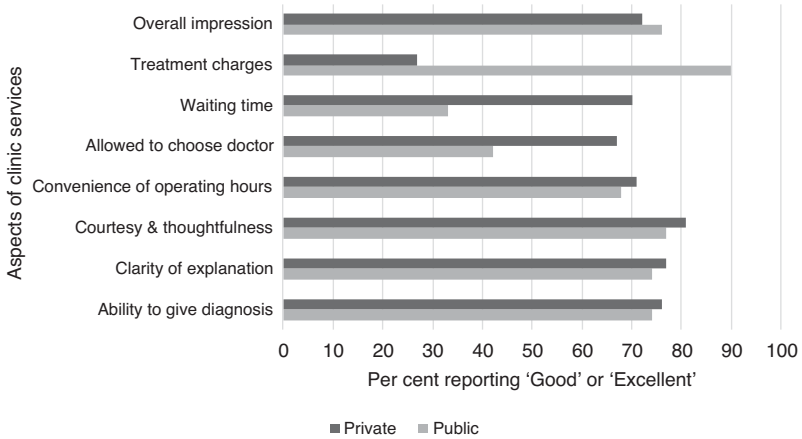
The Malaysian Health Care Demand Analysis in 2013 noted that the per capita outpatient visits to doctors in Malaysia ‘are comparable with the lower end of the range of levels seen in OECD economies, and about average for countries in the Asia Pacific region with available estimates’. It also found that utilisation had increased from one consultation per capita in the 1930s to >4 consultations in the 2000s. This came from increased utilisation of the public sector starting from the 1960s and 1970s and the rapid increase in utilisation of the private sector after 1980 (Health Policy Research Associates et al., 2013) (Figure 8.4). In terms of equitable utilisation, the study found that ‘the poorest 50% of the population used almost two-thirds of . . . visits to public facilities, whilst the richest 50% of the population account for two-thirds of visits to private providers’. Similar patterns were observed for the utilisation of inpatient services. Unfortunately, the study did not report on differentials in utilisation in the three geographic regions.

### 8.5.3 *Satisfaction*

Human resources play a large role in determining client satisfaction with healthcare services. The community perception module of the 2015 National Health and Morbidity Survey obtained user satisfaction scores on several aspects of services in clinics and hospitals in the public and private sectors. In terms of provider behaviour, more than 70% of users of clinics and hospitals recorded satisfaction levels of ‘good’ or ‘excellent’ in terms of ‘ability to give diagnosis and treatment’, ‘give clear explanations’ and ‘courtesy and helpfulness’. There was little difference between the satisfaction levels reported by users of public and private facilities (Figures 8.5 and 8.6). However, among the other aspects of care, the main source of dissatisfaction regarding public sector clinics and hospitals was waiting time, whereas that for the private sector was treatment charges (Figures 8.5 and 8.6).

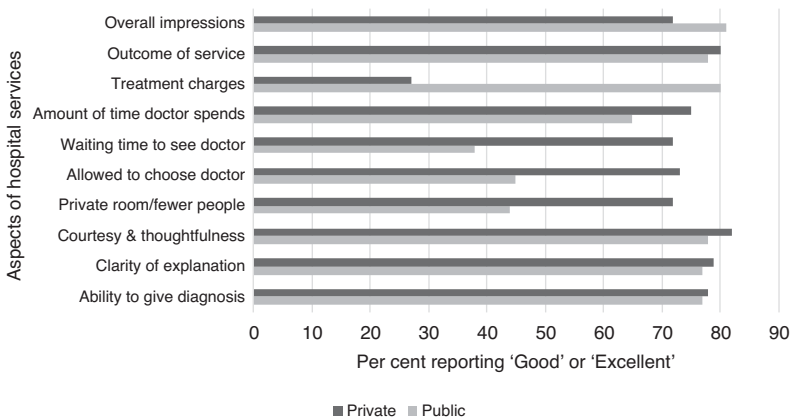
### 8.5.4 *Quality of Care*

While many factors contribute to quality of care, provider competence and behaviour is a crucial factor therein. During the 1980s, Malaysia was a leader among the developing nations in developing systematic



**Figure 8.5** Reported satisfaction with public and private clinics, 2015.

Source: Institute for Health Systems Research, n.d.



**Figure 8.6** Reported satisfaction with public and private hospitals, 2015.

Source: Institute for Health Systems Research, n.d.

monitoring and improving quality of care in the health sector. The aim has been to encourage the adoption of a mindset for quality and care that ensures good monitoring and improvement practices among healthcare providers. Although there is a wealth of data from the public sector, data from the private sector are limited, thereby limiting the overall estimate of quality of care.

A 2016 study by an international group from the Harvard T. H. Chan School of Public Health and the MoH (Ministry of Health Malaysia & Harvard T. H. Chan School of Public Health, 2016) used data from the National Medical Care Surveys (NMCS 2012 and 2014) (Clinical Research Centre, 2014) to replicate 66 indicators to analyse the quality of primary care. They found that ‘patients received around 57% of recommended care’ and that ‘these estimates are close to the aggregated quality of care estimates found in the United States and Australia, which range from 55 to 57% although the estimates are not strictly comparable due to differences in the set of indicators used and patient case mix’.

Systematic data for hospital care were limited (Ministry of Health Malaysia & Harvard T. H. Chan School of Public Health, 2016). However, based on mortality rates for common acute conditions, they found that

30-day mortality rates for acute myocardial infarction and haemorrhagic and ischaemic stroke (admissions calculated according to actual deaths both in and outside hospitals) were high in 2008 compared to most OECD countries (but comparable to Korea) but have been declining in the past decade with convergence towards rates observed in OECD countries . . . Hospital case management has been improving and approaches OECD countries for these conditions. (Ministry of Health Malaysia & Harvard T. H. Chan School of Public Health, 2016).

It could be concluded that the quality of clinical care provided by the Malaysian health workforce is generally within acceptable standards.

## 8.6 Conclusion

In the Malaysian experience, the evolution of the health workforce was determined by the demands of the evolving service delivery system and the capacity of educational institutions, both local and foreign, to produce health workers. As noted in earlier chapters, the evolution of service delivery patterns was influenced by evolving socio-economic status, demographic profile and morbidity and mortality in a community. In parallel, educational status and evolving socio-economic status influenced the evolution of educational institutions. This interaction between demand and supply was moderated by financing and governance measures that evolved over time in recognition of the competing



pressures from the larger ecosystem on the demand for and supply of health workers.

Governance and financing mechanisms flexibly shaped the health workforce in response to demands from the health services as they evolved in response to population and health demands.

**Legislation** required registration and annual licensing for practice key professions, resulting in:

- control of unqualified practitioners, and
- standards for practice defined by recognised qualifications and sources of qualification.

**Education standards** for curriculum and quality were enforced during:

- the earlier phases – through licences and recognition only of institutions only in the public sector (mainly the MoH), and
- the later phases – through a regulatory authority (the MQA).

**Financing** of students for training has mostly been from the government for study at local public and private institutions and foreign institutions. This largely facilitated the government's management of the composition, numbers and quality of the health workforce.

**Employment:** Being the major employer, the public sector can set standards regarding wage structure and benefits packages. However, in the case of specialist doctors, where demand exceeds supply, pressures from the private sector created the necessity for the public sector to upgrade its benefits package.

**Foreign inputs** have been used strategically to develop and support local resources:

- Monetary aid has been negligible.
- Technical input is used strategically to design curricula, train trainers and set standards.
- Expatriate staff have been very few, mainly for working in rural areas during the earlier years and to provide specialist skills while awaiting the development of local expertise.

The **composition of the workforce** contributed to the development of an affordable health system.

- Nurses were the backbone of the rapidly developing rural health service that responded effectively to conditions of high maternal and infant mortality (Pathmanathan et al., 2003) and remain the dominant category in the health workforce. They far outnumber doctors.
- ‘Task shifting’, although not acknowledged formally, has been practised throughout all phases of development in accordance with specific service needs. Anecdotal evidence suggests that it was associated with focused on-the-job training (e.g. procedures in and anaesthesia by medical assistants, emergency obstetrics by nurse-midwives in hard-to-reach locations, and renal dialysis by nurses).
- Education programmes aim to build competence, particularly among nurses and doctors specialising in public health, to manage health programmes and respond to health behaviour that is influenced by the patient’s cultural and personal beliefs.

**Alignment of educational curricula with the competencies** required in the health sector has been achieved through effective institutional mechanisms. However, the reliance on the public sector to provide almost all facilities for acquiring clinical skills is a major impediment.

**The major challenges that persist include:**

- **The structural divide between the public and private sectors**, where the health workforce in the public sector is tax-funded and salaried, and in the private sector it is largely fee-for-service self-employed. This has contributed to:
  - experienced and more highly skilled staff moving from the public sector to the private sector, and
  - the consequent difficulty in achieving geographic equity in staff distribution.
- **The gap between the education and health sectors**, whereby:
  - healthcare workers are produced in the education sector, and
  - graduates are utilised in the health sector.

The higher categories of healthcare workers undergo relatively long and expensive training. The time lag between entry to an education programme and entry into the workforce could range from 4 years for courses of shorter duration to as long as 10–12 years for doctors. The health sector is unable to predict and prepare

for large changes in the quantity or quality of entrants into the workforce, because institutional mechanisms are weak in terms of:

- providing timely information on the numbers and types of graduates the health sector can expect in forthcoming decades, and
- joint strategic planning between the two sectors to adjust production to the capacity for utilisation.

The result is an imbalance between production and absorption capacity and between production and health sector requirements. When the health sector had control over both production and utilisation, the two could be managed through relatively simpler governance mechanisms. With the evolution of systems, much more sophisticated and time-sensitive mechanisms are needed to generate information and coordinate policies and policy implementation tools.

The outcomes of this interaction between the supply and demand of healthcare workers impacts on the access, quality, satisfaction and safety of healthcare, which in turn impacts on the morbidity and mortality in the community.

## 8.7 Key Messages from Malaysia's Experience

### 8.7.1 *What Went Well?*

- The composition of the workforce was crucial in the development of an affordable healthcare system. Key features were:
  - The availability and competence of staff to deliver key tasks at the sites where they were required.
  - Nurses, midwives and medical assistants formed the backbone in the early years.
  - 'Task shifting', although not acknowledged formally, was practised in accordance with specific service needs.
  - Educational curricula for all categories were closely aligned to explicitly defined competencies required in healthcare services.
- The health workforce was shaped flexibly to respond to demands from the health services:
  - through recognition of opportunities and threats in the larger ecosystem and the appropriate use of:

- governance (e.g. registration, annual licensing, defined standards for eligibility to practise, wage and benefits packages), and
- financing mechanisms (such as publicly funded training).
- Foreign inputs were used strategically to develop and support local resources.

### 8.7.2 *What Did Not Go So Well?*

- The structural divide between the public and private sectors contributed to:
  - brain drain from the public sector to the private sector, and
  - a consequent difficulty in achieving geographic equity in distribution of staff.
- There were gaps in co-ordination between production (education) and utilisation (health) due to weak institutional mechanisms.

### 8.7.3 *Trends and Challenges*

- Rising expectations of the workforce and the public create the risk of mismatch between workforce competencies and the community's healthcare requirements.
- Rapid development of technology will require new competencies and render some competencies redundant.

## References

- Buang, S., Jaafar, S., Pathmanathan, I. and Saint, V. (2018). Human papillomavirus immunisation of adolescent girls: improving coverage through multi sectoral collaboration in Malaysia. *British Medical Journal*, 363(k4602), 74–82.
- Buchanan, J. (2015). *HRH Governance, Strategic Planning and Analysis: Support to HRH Strategic Planning in Malaysia*, Office for Malaysia. Brunei and Singapore: World Health Organization (unpublished).
- Clinical Research Centre. (2014). *National Medical Care Survey*. Kuala Lumpur: Clinical Research Centre.
- Department of Statistics. (2001). *Population Distribution and Basic Demographic Characteristic Report, Population and Housing Census 2000*. Online report. [www.statistics.gov.my/english/census/pressdemo.htm](http://www.statistics.gov.my/english/census/pressdemo.htm)

- Department of Statistics Malaysia. (2019). *Migration Survey Report, Malaysia, 2016*. Online report. [https://dosm.gov.my/v1/index.php?r=column/ctHEMEByCat&cat=125&bul\\_id=RldLdXFnQUppeGM5Yk1HODITMVI6UT09&menu\\_id=U3VPMldoYUxzVzFaYmNkWXZteGduZz09](https://dosm.gov.my/v1/index.php?r=column/ctHEMEByCat&cat=125&bul_id=RldLdXFnQUppeGM5Yk1HODITMVI6UT09&menu_id=U3VPMldoYUxzVzFaYmNkWXZteGduZz09)
- Economic Planning Unit. (n.d.). *Rancangan Malaysia Kelapan (Eighth Malaysia Plan) 1986–1990*. Online report. <https://web.archive.org/web/20070323094806>
- Economic Planning Unit. (2004). *Malaysia: 30 Years of Poverty Reduction. Growth and Racial Harmony. A Case Study from Scaling Up Poverty Reduction*. Shanghai: World Bank.
- Government of the Federation of Malaya. (n.d.). *Annual Report, Malaya, 1955*.
- Hambali, Z. B. (2015). *Kajian Pelaksanaan Polisi KMP dan KKM: Keberkesanan Pelaksanaan terhadap Permintaan and Pengeluaran Doktor Perubatan IPT di Malaysia 2014* [Study of the implementation of policies of the Ministries of Higher Education and Health: Effectiveness of implementation regarding demand and production by Medical Institutions in Malaysia 2014] (unpublished study).
- Hameed Musafar, L. B. (2014). *An Enquiry into Privatisation's Impact on Healthcare Services in Malaysia*. Kuala Lumpur: University of Malaya.
- Health Policy Research Associates (HPRA), Institute for Health Systems Research (IHSR) and Institute for Health Policy (IHP). (2013). *Malaysia Health Care Demand Analysis: Inequalities in Healthcare Demand and Simulation of Trends and Impact of Potential Changes in Healthcare Spending*. Putrajaya: Ministry of Health Malaysia.
- Institute for Health Systems Research. (n.d.). *Community Perceptions Module of the National Health and Morbidity Survey 2015*. Setia Alam: Institute for Health Systems Research.
- Institute for Public Health. (1986). *National Health and Morbidity Survey 1986*. Kuala Lumpur: Institute for Public Health.
- Institute for Public Health. (1996). *National Health and Morbidity Survey*. Kuala Lumpur: Institute for Public Health.
- Ismail, A. M. and Martinez, E. J. (1975). *Our Health Services in the Seventies*. Kuala Lumpur: Ministry of Health Malaysia.
- Koh, P. C. and Abdul Rahman, Z. A. (2015). Tracking the past: the local culture of Malaysian eating and lifestyle. International Conference on Local Knowledge: Axis of Global Knowledge. Online paper. [www.academia.edu/37630568/Tracking\\_the\\_Past\\_The\\_Local\\_Culture\\_of\\_Malaysians\\_Eating\\_Habit\\_and\\_Lifestyle](http://www.academia.edu/37630568/Tracking_the_Past_The_Local_Culture_of_Malaysians_Eating_Habit_and_Lifestyle)
- Lim, K. G. (2016). A review of adult obesity research in Malaysia. *Medical Journal Malaysia*, 71(Supplement1), 1–19.

- Ministry of Health Malaysia. (1971). *Annual Report*. Kuala Lumpur: Ministry of Health Malaysia.
- Ministry of Health Malaysia. (1974). *Annual Report*. Kuala Lumpur: Ministry of Health Malaysia.
- Ministry of Health Malaysia. (1982). *Annual Report*. Kuala Lumpur: Ministry of Health Malaysia.
- Ministry of Health Malaysia. (1983). *Annual Report*. Kuala Lumpur: Ministry of Health Malaysia.
- Ministry of Health Malaysia. (1984). *Annual Report*. Kuala Lumpur: Ministry of Health Malaysia.
- Ministry of Health Malaysia. (1986). *Annual Report*. Kuala Lumpur: Ministry of Health Malaysia.
- Ministry of Health Malaysia. (1995a). *Annual Report*. Kuala Lumpur: Ministry of Health Malaysia.
- Ministry of Health Malaysia. (1995b). *Health Facts 1995*. Kuala Lumpur: Planning Division, Ministry of Health Malaysia.
- Ministry of Health Malaysia. (2000). *Annual Report*. Kuala Lumpur: Ministry of Health Malaysia.
- Ministry of Health Malaysia. (2010). *Annual Report*. Putrajaya: Ministry of Health Malaysia.
- Ministry of Health Malaysia. (2016a). *Health Facts 2016*. Putrajaya: Planning Division, Ministry of Health Malaysia.
- Ministry of Health Malaysia. (2016b). *Human Resources for Health, Country Profiles 2015 Malaysia*. Putrajaya: Ministry of Health.
- Ministry of Health Malaysia and Harvard T. H. Chan School of Public Health. (2016). *Malaysian Health Systems Research Volume 1: Contextual Analysis of the Malaysian Health System March 2016*. Putrajaya: Ministry of Health Malaysia.
- National Specialist Register. (n.d.). *National Specialist Register*. Online document. [www.nsr.org.my/index2.htm](http://www.nsr.org.my/index2.htm)
- Noorliza, M. N. et al. (2012). *Report: House Officer Performance in Malaysia 2009–2011*. Setia Alam: Institute of Health Systems Research, Ministry of Health.
- Pathmanathan, I., Liljestrand, J., Martins, J. M., Rajapaksa, L. C., Lissner, C., de Silva, A. et al. (2003). *Investing in Maternal Health: Lessons from Malaysia and Sri Lanka*. Washington, DC: World Bank.
- Prime Minister's Department. (n.d.a). *Rancangan Malaysia Kelima (Fifth Malaysia Plan) 1986–1990*. Online report. <http://pmo.gov.my/dokumenattached/RMK/RMK5.pdf>
- Prime Minister's Department. (n.d.b). *The Fourth Malaysia Plan (FMP) 1981–1985*. Online report. [www.pmo.gov/dokumenattached/RMK/RMK4.pdf](http://www.pmo.gov/dokumenattached/RMK/RMK4.pdf)

- Public Health Institute. (1983). *Study of Hospital Utilization in Peninsular Malaysia*. Kuala Lumpur: Ministry of Health.
- Suleiman, A. B. and Jegathesan, M. (eds.). (2000). *Health in Malaysia: Achievements and challenges*. Putrajaya: Ministry of Health Malaysia.
- World Health Organization. (1977). *World Health Statistics Annual, 1973–77*. Geneva: World Health Organization.
- World Health Organization. (2014). *Human Resources for Health Country Profiles: Malaysia*. Online report. <https://iris.wpro.who.int/handle/10665.1/10530>
- Wraight, B. (2015). *Strengthening Health Professionals Regulation in Malaysia: Key Observations and Policy Options*. Putrajaya: Ministry of Health.

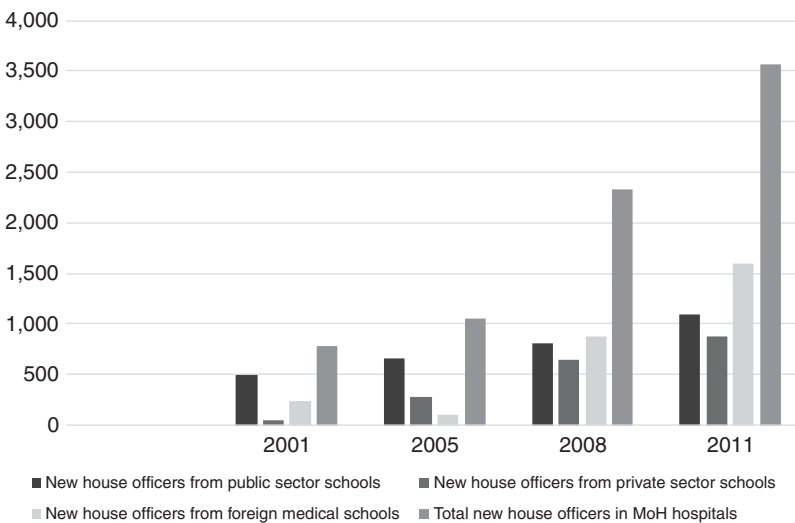
### System Analysis Case Study 8.1: Unexpected Influx of New Medical Graduates Threatens to Overwhelm the Health System

*Indra Pathmanathan and David T. Tan*

This case study illustrates the interactions between the health and education sectors and the interactions between the health workforce and service delivery, health sector governance (administrative and legislative) and health sector financing (payment of providers and budgetary allocations). It also provides insights into the dynamics between the broader ecosystem (public perceptions and demands and political responses) and the health workforce.

#### Background

Like all developing countries, Malaysia struggled for decades to have sufficient doctors for its growing population and increasingly complex healthcare requirements. During the first decade of the 21st century, there was an unforeseen three-fold increase of new medical graduates seeking to enter the workforce (Figure 8-A). The health system



**Figure 8-A** New graduates entering the workforce as HOs.

Source: Ministry of Health Malaysia, 2016, p. 73.



struggled to provide sufficient HO positions for the new graduates, and questions arose as to whether Malaysia had too many doctors. A mini crisis was in the making.

A quick review showed that Malaysia's number of doctors per 1,000 population was relatively low compared to OECD (Organisation for Economic Co-operation and Development) countries and regional neighbours. The issue was not too many doctors but the inability to cope with the rapid increase in the production of new doctors. This case study analyses the genesis of the situation, its subsequent impact on the health system and the health system's responses.

#### **Box 8-A The career pathway for doctors in Malaysia**

##### **Production of Doctors**

The average duration of a medical programme is five years. Malaysian doctors are produced in public and private (for-profit) Malaysian universities and in several foreign universities. Most students are supported by scholarships and loans provided largely by the government.

##### **House Officers**

Every medical graduate is required to complete an internship as a house officer, which is a supervised apprenticeship in public sector hospitals. During this period, HOs are governed by stringent criteria, including sufficient specialist doctors to serve as supervisors, clinical material (patients) and clinical facilities (hospitals, beds, equipment). On successful completion of this stage of their training, the doctor is registered as a medical practitioner (or general practitioner – GP).

##### **Post-graduate Training**

After a period of service as medical officers, doctors undergo up to four years of post-graduate (PG) training to become specialists. This training requires supervision by competent specialist doctors, and it requires patients or practice settings and equipment relevant to the speciality (Figure 8-B). Such training is available only in hospitals in the public sector – very largely those under the MoH.

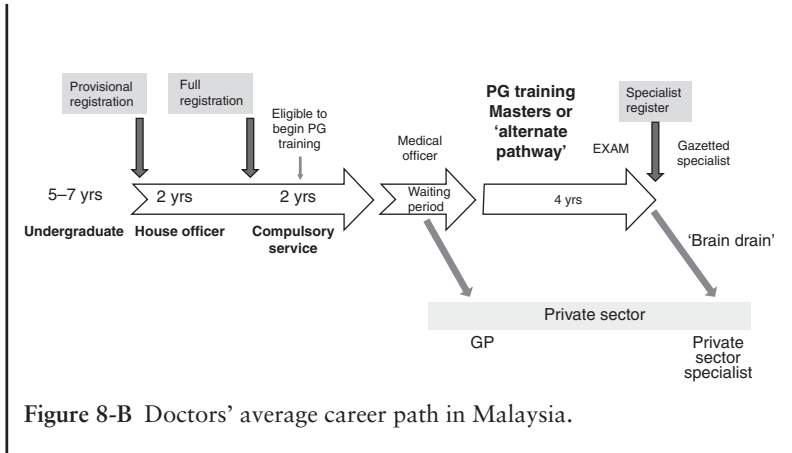


Figure 8-B Doctors’ average career path in Malaysia.

### Genesis of the Mini Crisis

Historically, the annual supply of new medical graduates was far below the number of available HO positions and the numbers required for the objective of having one doctor per 400 population (Prime Minister’s Department, Malaysia, 2015). Towards the end of the 20th century, economic and educational growth had resulted in a rapid increase in school leavers eligible for tertiary education. Thus demand for medical education grew rapidly – a positive development in light of the need for more doctors. This created a gap between supply and demand for medical education, which the Malaysian government responded to via two major actions (Figure 8-C).

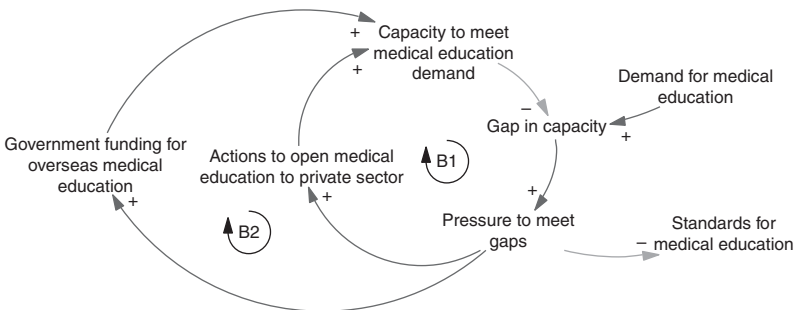
First, the liberalisation of education policies opened the tertiary education sector to the private sector. This was part of a broader privatisation policy by the Malaysian government and led to the establishment of many new medical schools, which rapidly escalated the production of medical graduates (Table 8-A and Figure 8-C, B1 loop). However, the limited availability of experienced academic clinical staff and inadequate clinical training facilities severely limited the quality of training in several of these institutions.

Concurrently, responding to public demand, the government rapidly increased loans (Figure 8-C, B2 loop) for Malaysian students to study at foreign universities. Political pressures contributed to large numbers

Table 8-A Rapid increase in medical schools and new medical graduates

	1995	2001	2005	2008	2011
Medical schools in Malaysia <sup>a</sup>	6	13	19	21	30
New HOs from public sector medical schools <sup>b</sup>		496	659	808	1,088
New HOs from private sector medical schools <sup>b</sup>		43	286	641	877
New HOs from foreign medical schools <sup>b</sup>		241	104	877	1,600
Total new HOs in MoH hospitals <sup>b</sup>		780	1,049	2,326	3,565

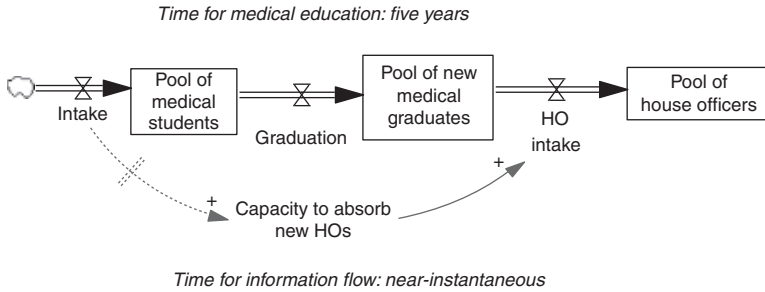
Sources: (a) [https://en.wikipedia.org/wiki/List\\_of\\_medical\\_schools\\_in\\_Malaysia](https://en.wikipedia.org/wiki/List_of_medical_schools_in_Malaysia)  
 (b) Planning Division. 2016. Human Resources for Health country profiles 2015: Malaysia. Ministry of Health.



**Figure 8-C** Meeting the demand. Pressure to meet the gap between supply and demand for medical education led the government to make policy changes that rapidly increased the capacity for medical education, with potential compromises in education standards.

of foreign medical degrees being recognised for registration and subsequent medical practice in Malaysia. While the country had a mechanism for recognising both local and foreign medical qualifications using fairly stringent criteria, the rapid increase in applications for recognition outstripped the system's capacity to apply the recognition criteria with diligence, creating a negative impact on education standards. (Figure 8-C, 'Standards of Medical Education').

Both these actions reduced the gap between demand for and provision of medical education. Two balancing loops (Figure 8-C, loops B1



**Figure 8-D** Lack of capacity planning. Employment planning did not reflect student intake rates. The dotted arrow indicates this lack of information flow and the missed opportunity to adjust the capacity of the health system to receive new medical graduates. The delay mark on the dotted arrow reflects the time required for the system to adapt to increase capacity.

and B2) had been set in motion, albeit with some potential compromises in the standard of education delivered.

By 2008, the scene was set for the large cohorts who had entered medical school during 2000–2003 to graduate and seek employment as HOs. Their competence was highly varied, depending on the quality of their medical education. However, the MoH was unprepared for the sudden surge in HO numbers. Neither the Ministry of Higher Education nor the MoH had used the medical student intakes to plan future employment capacity. Instead, the MoH had based its planning on previous trends. This approach had worked well in the past but was unable to detect and respond to changes outside the established pattern. Thus the extent of the employment challenge surfaced only when the number of applications for house officer positions became overwhelming (Figure 8-D).

### *The First Bottleneck: An Imbalance between the Pool of Graduates Awaiting Employment and the Capacity to Provide House Officer Placements*

The health system had insufficient specialist doctors to supervise and clinical facilities to absorb all the new graduates. In 2014, only 3,602 places were available for 4,740 graduates. This resulted in an increasing pool of graduates awaiting employment (Figure 8-E, ‘Pool of New Medical Graduates’), which generated frustration and anxiety among



graduates and their parents, loss of skills in the new graduates and increased public and political pressures.

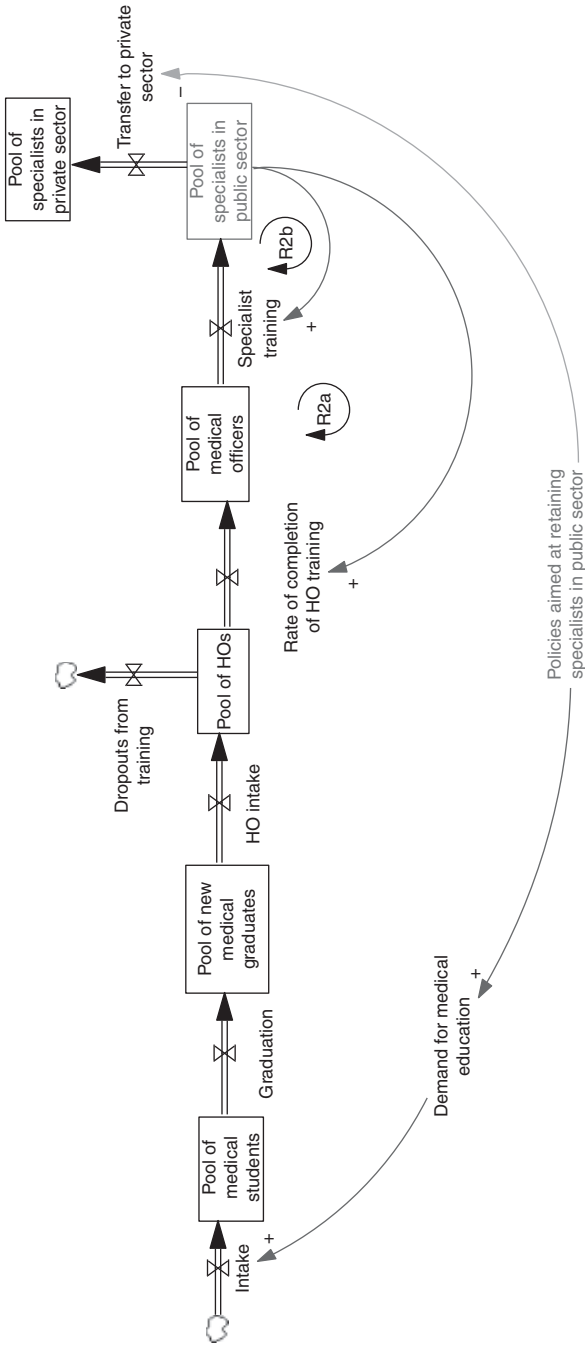
The reduced standards for medical education (described earlier) lowered the average skill level of the incoming house officers such that a significant proportion of new entrants into the HO programme had inadequate entry competence. This resulted in extension of the HO period beyond the specified 2 years, as seen in 2014, when only 58.8% of HOs completed their training in the allotted time, thereby clogging up available posts and exacerbating the waiting times. Additionally, the waiting period for employment deteriorated the skill levels of the incoming house officers, creating a reinforcing feedback loop that further contributed to longer waiting periods (Figure 8-E, R1).

Initial attempts to accommodate the increased demand for HO positions placed pressure on the training environment. For example, instead of 14 beds per trainee, the ratio was reduced to 2.8 beds per trainee. Only internal medicine had the desired ratio of five trainees per specialist (Lim, 2017). The supervisory load on existing specialists escalated. Inadequately prepared HOs and their overworked and frustrated supervisory specialist doctors showed many signs of stress: the symptoms included illness, complaints and even dropouts from HOs, and complaints, frustration and lowering of supervision standards among specialists. Thus the quality of HO training was compromised.

### *The Second Bottleneck: An Imbalance between Applicants (Medical Officers) and the Capacity to Provide Post-graduate (Specialist) Training*

Experienced practising specialist doctors are critical for the training of HOs and potential specialists. As described earlier in this chapter, an ongoing challenge for the health system is the loss of specialist doctors from the public to the private sector. This limits the rate at which HO and specialist training can be carried out, creating reinforcing feedback loops (Figure 8-F, loops R2a and R2b) that exacerbated the limited absorption of HOs from the waiting pool.

The MoH was aware of this challenge. Advocacy over several previous years resulted in new policies being implemented in 2011, which coincided with the height of the house officer bottleneck crisis. Salaries and other perks were given to public sector specialists. However, this also generated an unintended consequence: it



**Figure 8-F** The specialist bottleneck. The pool of public sector specialists limits the capacity to train HOs and medical officers and further their career progression, which in turn limits the pool of public sector specialists.

enhanced the prestige of the medical specialist, thereby reinforcing the latent demand for medicine as a career among students and their parents, thereby adding pressure to the already engorged pipeline of would-be doctors (Figure 8-F, 'Demand for Medical Education').

As the enlarged cohorts of medical graduates advance through their career paths, a second bottleneck is emerging. The career path of medical officers requires post-graduate training in speciality areas (Figure 8-B). The existing number of public sector specialists available to provide this training limits the system's capacity, creating another crucial feedback loop (Figure 8-F, R2b).

In 2013, 4,500 new graduates entered the workforce, compared to only 240 doctors (Ministry of Health Malaysia, 2016) who completed post-graduate training. These larger cohorts will substantially increase the pool of medical officers awaiting post-graduate training, creating much longer waiting times. This will result in frustration and loss of skills and motivation and will create strong pressure for expanded opportunities for specialist training. In the long term, resolving the specialist training bottleneck and retaining specialists in the public sector is crucial for increasing MoH capacity to train house officers and medical officers.

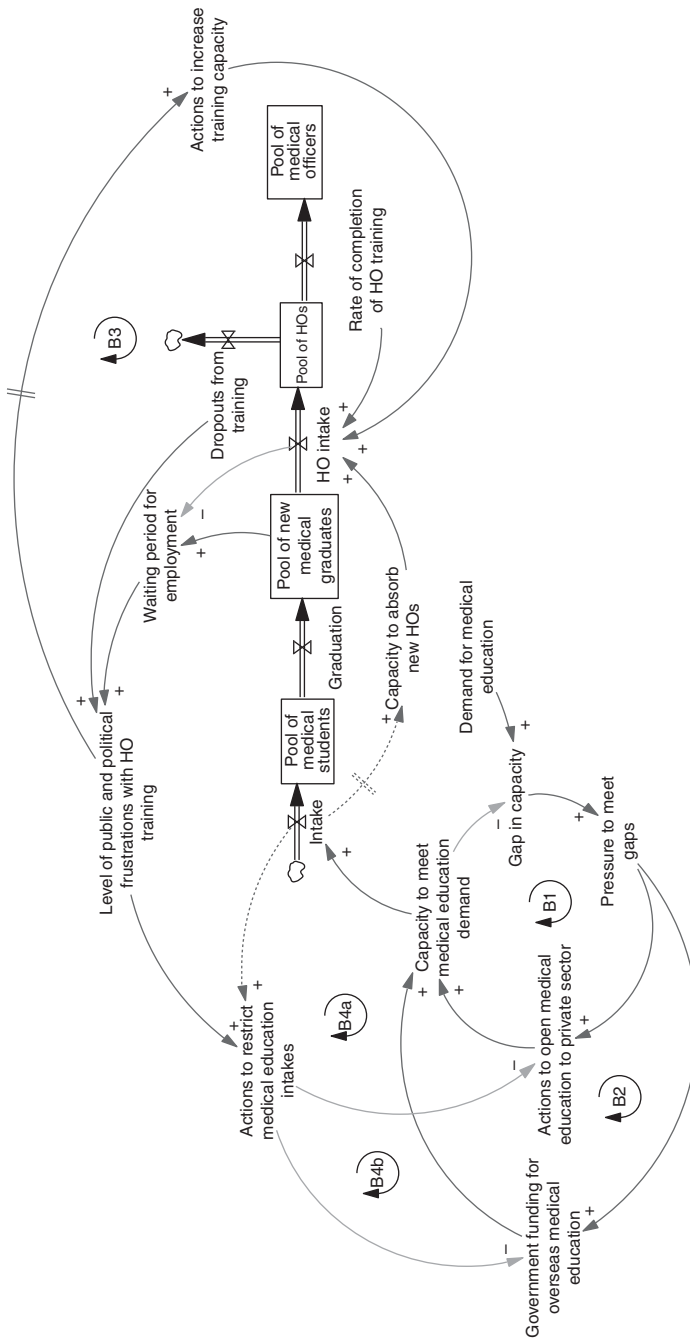
### *System Responses*

An analysis of the health system's response shows the capacity for self-correction but also reveals that the structural flaws that allowed the emergence of the HO crisis have not been addressed (Figure 8-G).

#### *Increase Capacity for Training House Officers*

**Public sector.** First, the MoH addressed public expectations regarding waiting time for HO appointments. The MoH went on to revise the structure of HO training by expanding HO postings beyond the four traditional core postings to include a further four specialities. The details of the training and service delivery systems had to be co-ordinated, such as criteria for rotations, duration of shifts and contact





**Figure 8-G** Systems responses to the crisis. New measures were taken to increase training capacity (B3) and to restrict medical education intakes to prevent continued escalation of the HO crisis (B4a and B4b). However, the gaps in the flows of information that prevented anticipation and proactive response to the change in the number of medical graduates has not been addressed. Thus the health system remains vulnerable to future shifts in the production of medical graduates.

hours with supervising specialists, to ensure quality of training while preserving quality of service delivery. To address the varied entry competence of new graduates, additional basic training had to be created for weaker HOs, while a fast-track system was introduced to enable competent HOs to reduce their training duration. Emphasis shifted from duration of training to demonstration of competence. The use of clinical skills laboratories was enhanced so that HOs acquired basic clinical skills without overburdening the patients. These measures improved the training output within the existing limitations but took time to design and implement (B3 loop, delays mark) and were insufficient to fully address the large increase in demand for HO training.

**Private sector.** Efforts to recruit the private sector to provide HO training proved unsuccessful. A variety of issues contributed to the barriers. The governance and financing structure of private hospitals posed barriers. Private hospitals would have to absorb the cost of the HO and their training with little financial benefit. In the private sector, most specialists had a contractual relationship with private hospitals. There would be complex financial, administrative and legal implications regarding the responsibilities for supervising HOs. Few private hospitals had the required case mix to provide adequate HO training.

**Regulate the Numbers of New Medical Graduates** The MoH engaged successfully in intersectoral dialogue at policy level to restrict the intake of medical students. A moratorium was placed on new medical schools, the number of entrants per school was capped and existing schools were required to rationalise through mergers to limit production and improve quality (Figure 8-G, loop B4a). Local medical schools required sufficient numbers to ensure financial viability; therefore, regulations were eased regarding the percentage of non-Malaysian students (not eligible for local HO training) permitted in each school. The dialogue also resulted in the limitation and rationalisation of public sector funding for medical training in foreign institutions (Figure 8-G, loop B4b). This situation created dismay among new cohorts of would-be students, aggrieved at not receiving the same benefits as their predecessors, and has the potential for negative political fallout.

### *Increased Post-graduate Training for Specialist Doctors (Education and Health Sector Interaction)*

The training of specialists is the purview of public universities, who themselves are under the MoE. Public sector medical schools have been encouraged to change focus from under-graduate training to specialist training. However, the number of available supervising specialists and clinical facilities (beds, equipment, patients) limits the capacity for increasing the production of specialists. A parallel pathway for specialist training was established under the MoH, whereby candidates completed their clinical training at MoH hospitals and sat for examinations conducted and accredited by UK-based boards such as the Royal College of Physicians. This initiative proved effective only for specialities that had limited requirements for gaining competency in interventional procedures, due to the limited access to facilities and equipment for such procedures. Various smaller initiatives were also established for twinning programmes with foreign universities that had campuses in Malaysia. Whether these measures will be sufficient to address the upcoming second bottleneck remains to be seen.

### *The Persistence of the Information Gap*

The health system was able to respond to the causes and consequences of the HO crisis with varying degrees of success. However, systems that would enable the collection and use of information that would allow the health system to adjust the intake of medical graduates and to prepare to receive HOs have not been implemented. This effectively creates a set of balancing loops with very long delays (Kim, 1992), which tends to generate a pattern of under-responsiveness followed by overcorrection. As the time between entry into medical school and production of doctors and the consequent system delays are largely fixed (Figure 8-B), early indicators such as medical student intake are all the more critical for the health system to respond to changes in the health workforce pipeline in a proactive, timely and sufficient manner.

While the Malaysian experience illustrates several successful policy interventions, it also demonstrates shortfalls. The most critical is the inability to establish a system that would provide timely information on future graduates to enable strategic planning. Efforts to create integrated information on human resources for health, through co-

ordination between education, health, finance and other sectors, have failed because of the absence of incentives for such information. A strategy that would shift the control of information to the health sector would be useful. Such a strategy would require entrants to medical schools to register their interest in obtaining HO positions.

### *Systems Lessons*

Systems analysis demonstrates that human resource (HR) management in health systems needs to apply lessons from the science of management logistics to avoid imbalances between the production and the utilisation of the health workforce, especially as the long training periods for most healthcare workers restrict the ability of health systems to detect and respond to these imbalances. Without strong mechanisms to ensure two-way information flows between producers who control the evolving status of future HR stocks and the managers and users of those stocks, ‘feast or famine’ scenarios will result for various categories of healthcare workers.

### References

- Kim, D. H. (1992). *System Archetypes I: Diagnosing Systemic Issues and Designing Interventions*. Online report. <https://thesystemsthinker.com/systems-archetypes-i-diagnosing-systemic-issues-and-designing-interventions>
- Lim, C. H. (July 2017). *Housemanship Programme in Malaysia: Availability of Positions and Quality of Training*. Online report. [https://penanginstitute.org/wp-content/uploads/jml/files/research\\_papers/HousemanshipIssue\\_LCH20July2017-Final.pdf](https://penanginstitute.org/wp-content/uploads/jml/files/research_papers/HousemanshipIssue_LCH20July2017-Final.pdf)
- Ministry of Health Malaysia. (2016). *Human Resources for Health. Country Profiles, 2015. Malaysia. Ministry of Health*. Putrajaya: Ministry of Health Malaysia.
- Prime Minister’s Department, Malaysia. (2015). *Eleventh Malaysia Plan 2016–2020: Anchoring Growth on People*. Putrajaya: Economic Planning Unit, Percetakan Nasional Malaysia Berhad.

### Note

1. West Coast states: Perils, Kedah, Penang, Perak, Selangor, Kuala Lumpur, Negri Sembilan, Melaka and Johor. East Coast states: Kelantan, Terengganu and Pahang. East Malaysia: Sabah, Sarawak and Labuan.