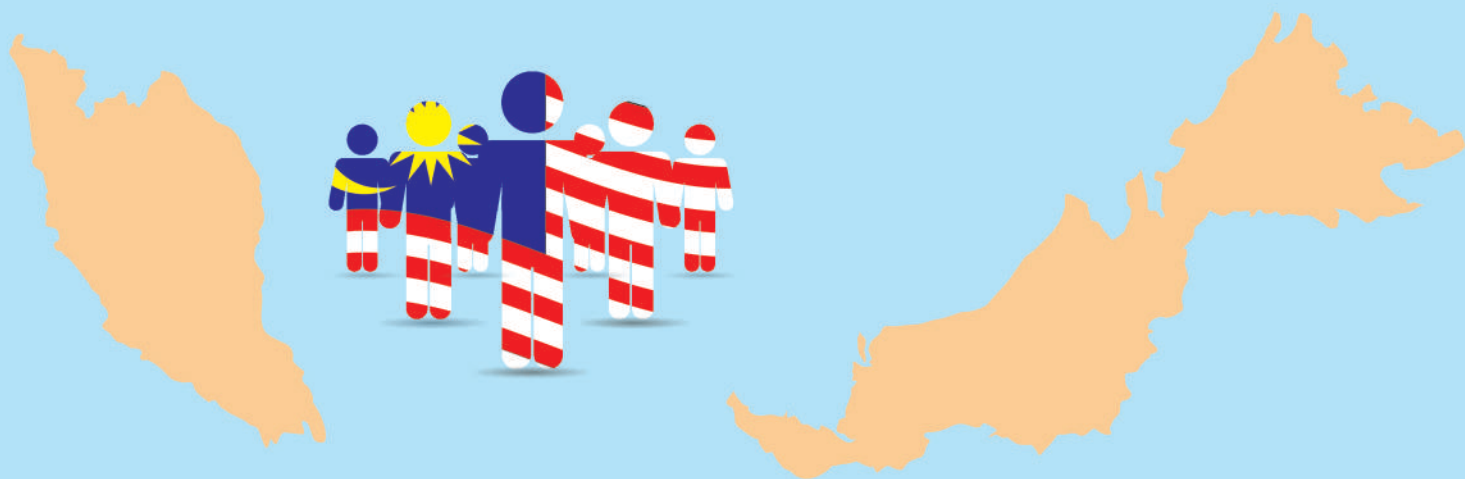
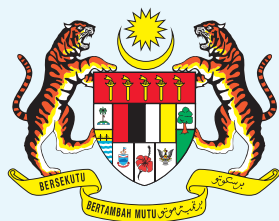


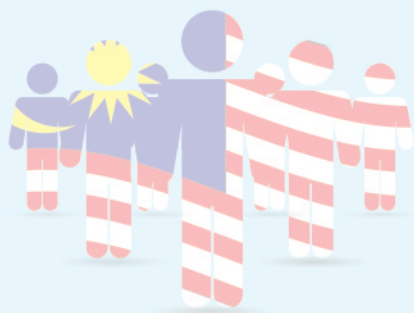
# HUMAN RESOURCES FOR HEALTH COUNTRY PROFILES 2015 MALAYSIA



PLANNING DIVISION  
MINISTRY OF HEALTH MALAYSIA



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PLANNING DIVISION  
MINISTRY OF HEALTH MALAYSIA



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## Human Resources For Health, Country Profiles 2015 Malaysia

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Dr Indra Pathmanathan.

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Data was obtained from:

- Health Informatics Centre
- Human Resources Division
- Clinical Research Centre
- Medical Development Programme
- Public Health Programme
- Oral Health Programme
- Pharmaceutical Services
- Malaysian Medical Council
- Malaysian Dental Council
- Malaysian Pharmaceutical Board
- Malaysian Nursing Board
- Malaysian Medical Assistants Board
- Traditional and Complimentary Medicine Division
- Ministry of Higher Education

## List of Abbreviations

AMO	Assistant Medical Officer
A&E	Accident and Emergency
AN	Assistant Nurse
CRC	Clinical Research Centre
CN	Clinical Nurse
FANZCA	Fellow of the Australian and New Zealand College of Anaesthetists
FRCR	Fellow of the Royal College of Radiologists
FRCS	Fellowship of the Royal College of Surgeons
HIC	Health Informatics Centre
HRH	Human Resource for Health
HRMIS	Human Resource Management Information System
ICT	Information Communication Technology
IT	Information Technology
IHM	Institute for Health Management
IIUM	International Islamic University of Malaysia
GDP	Gross Domestic Product
GHO	Global Health Observatory
GINI	A measure of statistical dispersion intended to represent the income distribution of a nation's residents, and is the most commonly used measure of inequality
MDC	Malaysian Dental Council
MMC	Malaysian Medical Council
MMed	Master of Medicine
MOD	Ministry of Defence
MOH	Ministry of Health
MOHE	Ministry of Higher Education
MQA	Malaysian Qualifications Agency
MRCP	Membership of the Royal College of Physicians
MRCPCH	Membership of Royal College of Paediatrics and Child Health
MRCOG	Membership of Royal College of Obstetricians and Gynaecologists
MYR	Malaysian Ringgit
MW	Midwifery
NGO	Non-Governmental Organisation
NHEWS	National Health Establishment and Workforce Survey
NMCS	National Medical Care Statistics
STPM	Sijil Tinggi Pelajaran Malaysia
UKM	National University of Malaysia
UM	University of Malaya
UNIMAS	University Malaysia Sarawak
USM	University of Science Malaysia
UiTM	University of Technology MARA
OECD	Organisation for Economic Co-operation and Development
O&G	Obstetric and Gynaecology
PPP	Purchasing Power Parity
T&CM	Traditional and Complementary Medicine
WHO	World Health Organisation
WPRO	Western Pacific Regional Office

## Executive Summary

**M**alaysia aspires to achieve ‘developed’ country status by 2020. Development of the health sector is an essential component of Malaysia’s development plans. The 11<sup>th</sup> Malaysia Plan of 2016-2020 has defined several strategies to improve the quality of the health services and provide universal access. Several of these strategies have implications for the human resources for health (HRH), including further development of human capital for health to ensure sufficient supply of competent and skilled healthcare personnel and improved management of such personnel to ensure the population receives optimum benefit.

This report gives a profile of key features of the health workforce in 2014 (or the nearest year), and the recent trends in supply and distribution. The primary purpose of the report is to contribute towards the establishment of a strategic planning process for future HRH to meet the needs and aspirations of the country.

### Health workforce supply and trends

Currently the number of Doctors, Dental practitioners, Pharmacists and Nurses per 10,000 population is about half or less than half the number in countries with comparable per capita income, or high income countries such as OECD countries or Asian countries such as Singapore or South Korea. For specialist medical practitioners, the discrepancy between Malaysia and selected OECD countries for which data is available, is even more pronounced (Malaysia has 3.42 compared to OECD 14.13 per 10,000 population). In interpreting this information it is important to recognise that the age structure and illness patterns in Malaysia differ from those of the compared countries, as does the healthcare delivery system.

In all four categories, since 2008, there has been an explosion of new graduates entering the workforce in Malaysia. The increase in specialist medical practitioners is much slower. The rapid increase in

new graduates has caused serious stress on the system. This includes stress on the specialists who are responsible for supervising the new graduates as well stress on the health system capacity for training them (beds, patient contact Dental chairs, operating theatres etc.). Further, concerns have been expressed by various stakeholders about the varied quality of the graduates entering the workforce. Two examples of concerns were the relatively high proportion of house-officers who require an extension of their two year housemanship period, and unemployable Nursing graduates who require intensive training before they could be employed.

Recently some measures have been introduced to reduce the rate of increase in production of medical and Nursing graduates in Malaysia (for example, a moratorium on new medical programmes and raising the entry requirements for Nursing). However it is important to recognise that since 2008, Malaysians who had received basic training in overseas universities formed about 40% of the new graduates who

entered the workforce. And in 2014, the major sources of overseas medical training were from Indonesia, Egypt, and Russia. For Dental practitioners, overseas trained graduates formed 35% of new graduates during the past 2 years. The existing moratorium would not affect foreign medical or Dental programmes that are recognised in Malaysia.

## **Distribution of Human Resources for Health (HRH)**

**Gender:** Females predominate in most categories of healthcare providers, with specialist Doctors being the exception. Nurses are almost entirely female, while more than 75% of Pharmacists and Dental practitioners and about 60% of all Doctors are female. Primary care Doctors and hospital-based Doctors have 50% female, while among specialist Doctors, only 39% are female. Among all other categories females dominate in almost all categories, with the exception of Assistant Medical Officers (AMO) and Geneticists. The feminisation of the workforce has policy implications for the future. For example, it might be necessary to consider providing opportunities for part time work, and calculate future HRH requirements based on 'full time equivalents' and provide child care arrangements for working staff.

**Public-private distribution:** The majority of Doctors, Dental practitioners, Pharmacists and specialist Doctors work in the public sector. This is with the exception of those Doctors who work in stand-alone clinics (clinics which are not based in hospital) that provide primary care, where almost 3 out of 4 such Doctors are in the private sector. About 80% of hospital-based Doctors, however, are in the public sector. The predominance of the public sector is

a recent feature and is due mainly to the recent large influx of new graduates who are required to do housemanship plus a period of compulsory service in the public sector. Among Nurses, the period 2009 – 2012 saw a rapid increase in the numbers in the private sector, however, by 2014 the number in the public sector remained about double that in the private sector. Among specialist Doctors, about 56% are in the public sector and this has not changed much during the period 2009 – 2013. A key concern in the public sector is the outflow of specialist Doctors from the public to the private sector, particularly since the majority of hospital beds, the provision of care for complex cases and clinical training for all categories is provided in the public sector. Meanwhile a key concern in the private sector is the inadequacy of Nurses with post-basic specialized training especially to work in intensive care and operating theatres.

**Age distribution:** Sector-wide data is available only for Dental practitioners and some groups of Doctors. Below age 30, almost all Doctors and Dental practitioners are in the public sector. Among Dental practitioners, in the next higher age group, 31-40 only 60% are in the public sector, and the percent decreases rapidly in each successive age group. Among Doctors, the shift to the private sector begins in the 30+ age group for primary care Doctors, and in the 40+ age group for specialists. Only 7% of specialists in the below-40 age group are in the private sector, whereas in the 40-49 age group 44% are in the private sector. This distribution reflects the career path of Doctors, whereby most graduate in their mid-twenties, serve the first four years in the public sector as house-officers and in compulsory service, followed by a further four or more years in the public

sector while training in their specialty. When they are fully qualified specialists, a sizeable proportion of them takes the option of moving to the private sector.

### **Recent trends in age profile in HRH employed by MOH:**

During the period 2011 – 2014 there has been a sharp increase in the proportion of Doctors, Dental practitioners and Pharmacists, who are below age 30. For the Nurses and assistant medical officers, a substantial proportion of them is in the 30-39 age group. For other categories such as Allied Health officers, the large majority are below age 40 years. The young age profile of the MOH workforce has implications for example in potential bottlenecks for promotion and specialist training.

**Regional distribution:** In all the regions, during the period decade 2003 – 2014, there was increase in numbers of Doctors, Dental practitioners, Pharmacists and Nurses per 10,000 population. Generally the west coast region have done best, followed by the east coast region, then Sarawak and lastly Sabah. However, during 2011 – 2014, Sarawak overtook the east coast region for Pharmacists, and narrowed the gap for Doctors and Nurses. Similarly, the east coast region have overtaken the west coast region for Dental practitioners.

All regions have seen an increase in most categories of specialist Doctors since 2010. The west coast region of Peninsular Malaysia have a higher number of specialists per 10,000 population than the other regions in Malaysia. The east coast region and Sarawak have similar numbers per 10,000 population for most specialties, with an exception of orthopaedic surgeons, where the east coast region have a higher number per 10,000 population. Sabah has the

lowest number of specialists per 10,000 population for all specialties. Measures to improve the regional distribution remains a key concern for MOH.

Public Health Medicine Specialist (PHMS) are employed largely by the MOH but some are also in universities, Local Authorities and the Ministry of Defense. Among the regions, the east coast region have the highest number per 10,000 population. Family Medicine is a relatively new area of specialization, and the number per 10,000 population in all regions is only about one-tenth of that of other major clinical specialties such as physicians and surgeons. The low numbers of Family Medicine specialists is placing a strain on the MOH policy to move towards increased primary care compared to hospital-based care.

### **Health Professions Education.**

This report does not aim to provide comprehensive information on training, but does include some data that was made available by the Ministry of Higher Education.

For the major categories of HRH, there has been no change in the number of training institutions and training programmes in Malaysia since 2012. A sizeable proportion of Doctors and Dental practitioners receive their basic training from foreign universities. Post graduate training for Doctors, Dental practitioners and Pharmacists is available in Malaysian public sector universities and this report provides data on the numbers produced in recent years. A recent initiative to increase post graduate training of Doctors is the establishment of a 'parallel pathway' which enables Doctors to sit for examinations of the Royal Colleges of the United Kingdom, while gaining clinical experience in Malaysia.

## Preface

**M**alaysia produced its first profile of human resources for health (HRH) report in 2013 in conjunction with the World Health Organisation, Western Pacific Regional Office (WHO 2014). The report relied on HRH data for the year 2011 and earlier. It served as a very useful tool to provide an overview of the HRH situation in the country and highlighted existing strengths and gaps. As a result, it served as a springboard to stimulate a strategic planning process for HRH over a medium term horizon.

One essential component of such a process is the availability of updated information on HRH. This second report provides such updated information reflecting the HRH situation in 2014 (or in the year closest to that date).

### Structure of this report

In the main report, each chapter provides a brief analysis and illustrative description of the stock, trends, age and gender profiles and geographic distribution of HRH in the country. Additionally, updated information on the production of HRH is provided. For items on which data for the private sector is not available, the analysis and description is limited to the health workforce employed by the MOH.

In this edition, a special chapter is added to highlight a summary of grey literature on Malaysian HRH, mostly from reports that are available internally within the Ministry of Health but is less accessible to external readers.

The report ends with a summary of the data limitations so as to provide the basis for developing a plan to improve HRH data quality.

The annexes provide annual data up to the latest year for which data is available, as well as a list of legislation governing HRH is provided.

This report does not describe the HRH educational systems and processes, and HRH financing and governance in Malaysia, because these topics were covered in the previous report, *Human Resources for Health country profiles: Malaysia. World Health Organisation, 2014.*

### Data sources

The previous HRH Report (WHO 2014) noted there were issues of inadequate quality and timeliness of data that arose from inadequate coordination between various units in the Ministry of Health, and also with other related agencies. Subsequently there has been some improvement in the availability of data due to the efforts of Planning Division of the Ministry of Health which has spearheaded efforts to improve coordination.

The Health Informatics Centre (HIC) was previously known as the Information and Documentation System Unit of the MOH. The HIC primarily is the source of official published and unpublished statistical data from the MOH. HIC collates the data from various divisions of the MOH and those items of data that the private sector is required by law to provide to the MOH. The internal MOH sources who provide primary data to the HIC include:

- Statutory Councils or Boards that under various laws, license seven of the health professions, namely Medical, Dental, Pharmaceutical,





Nursing and Midwifery, Assistant Medical Officers, Optical and Food Analysts. Licensing covers both public and private sectors. Additionally, although Allied Health officers and Traditional and Complementary Medicine practitioners are not required as yet by law to register themselves with their respective Boards, they are encouraged to do so on a voluntary basis, and data on those who have registered themselves is included in this Report.

- Human Resources Management Division of the MOH, maintains data on all employees of the MOH including the Human Resources Management Information System (HRMIS) that records personnel data of employees in the Federal civil service.
- Most of the data obtained from this source, does not have complete information on HRH in other public sector institutions or the private sector.
- Programme Divisions in the MOH, maintain their own records of HRH employed by the MOH and placed in their respective Programmes. They use such data for purposes of deployment, training, and credentialing.

For the purpose of this report, the Health Policy and Planning Unit of the Planning Division, MOH coordinated the compilation of updated data available from the HIC as well as other data that was available only from one of the other sources listed earlier. The Unit was also responsible for comparing the data available from different sources and checking the quality of data.

Additional data sources that have provided data for this report are;

- The Clinical Research Centre (CRC), MOH which provided data from two

nationwide surveys namely, the National Health Establishment and Workforce Survey (NHEWS) 2012-2013 which covered all hospitals (public and private) and the National Medical Care Statistics (NMCS) which was a sample survey in 2014, of primary care provided in free standing clinics in the public and private sectors.

- The Ministry of Higher Education (MOHE) who provided specific data on request.
- Reports or papers from unpublished sources most of which are specific reports or papers from academic institutions.
- Interviews with key informants in the public and private sectors provided valuable insights into issues, and also perceptions on issues for which quantitative data is not available.

## Limitations in data analysis and utilization

**Data discrepancies:** The data from all the sources listed earlier is not linked, and there are data discrepancies between the systems.

**Inadequate analysis:** Because of limitations in the technology and/or human resources who manage each system, much of the data that is collected is not analysed routinely for:

- age, gender and geographic distribution
- HRH density in relation to population.

This limitation created the need for this report.

**Inadequate utilization:** Much of the relevant information on HRH is difficult to access and is not compiled routinely in a single user-friendly publication. This contributes to limited utilization.



# 1

## INTRODUCTION

HUMAN RESOURCES  
FOR HEALTH COUNTRY  
PROFILES 2015  
**MALAYSIA**





# 1. INTRODUCTION

**M**alaysia practices a system of Parliamentary democracy with a constitutional monarchy. It has three branches of government, namely the Executive, the Legislature and the Judiciary.

## 1.1. Demography

Malaysia covers an area of about 330,803 square kilometers, consisting of eleven states and two federal territories in Peninsular Malaysia, and two states and a federal territory on the island of Borneo. Malaysia is a multi-ethnic country with a population of 29.75 million in 2013, and a population density of about 88 persons per km<sup>2</sup>.

About 75.1% of the population is urban and the rate of urbanization is about 2.4% per annum. In 2013, about 48.5% of the population was female, and the population growth rate was estimated as 1.3% per annum. About 26.1% of the population are under 15 years, 68.4% are aged 15-64, and 5.3% are 65 and above. The principal ethnic groups are Malay, Chinese and Indian. Other significant groups are the indigenous people of Sabah and Sarawak, including Kadazan, Dusun, Bajau, Murut, Iban, Bidayuh and Melanau. In 2013, 2.4 million of the population were non-Malaysian citizens, including foreign workers.

Malaysia practices a system of Parliamentary democracy with a constitutional monarchy. It has three branches of government, namely the Executive, the Legislature and the Judiciary.

## 1.2. Economic situation

Malaysia has sustained a strong economic growth for the past three decades and achieved a real GDP of MYR 1,056.7 million in 2014. The GDP growth rate was estimated at 5.0 – 5.5% in 2014. Per capita income was MYR 34,126 (US\$ 10,898). Poverty rates have declined dramatically from 50% in 1970 to 1.7 % in 2012 (Economic Planning Unit 2013). The GINI coefficient was 0.431 in 2012 (Economic Planning Unit 2015a). The unemployment rate is 3.1% with female unemployment rate was 3.2% in 2012.

## 1.3. Health Expenditure

Health Expenditure was a comparatively low 4.50% of GDP in 2012, with public expenditure being 53% of total health expenditure (Ministry of Health 2014a). Health was allocated 8.5 1% of the national budget in 2015, compared to 20.4 % for Education, and 2.5% for Defense. (Ministry of Finance 2014).

## 1.4. Health Status

Since Independence, Malaysia has achieved great improvement in health as reflected by certain key health indicators. Life expectancy at birth for both genders has increased over the years, rising from 56 years for males and 58 for females in 1957 to 72.5 years and 77.1 years respectively in 2013. Infant mortality rate and maternal mortality rate, which is a proxy indicator of overall health system performance, reduced drastically to levels comparable

to developed countries. The maternal mortality rate has dropped from 280 per 100,000 live births in 1957 to 25.6 per 100,000 live births in 2012. Likewise the

infant mortality rate has come down from 76 per 1,000 live births in 1957 to 7.7 per 1,000 live births in 2013. Table 1 provides a summary of key health indicators.

**+Table 1:** Key Indicators of Health Status

Key Health Indicator		Year
Total Expenditure on Health <sup>1</sup>	4.5% of GDP	2012
Life Expectancy at birth <sup>1</sup>	72.5 Males, 77.1 females	2013
Infant Mortality Rate (death per 1000 live births) <sup>1</sup>	6.3 (Males 7.0 Females 5.6)	2012
Under 5 mortality rate (death per 1000 live births) <sup>1</sup>	7.7	2012
Maternal Mortality Ratio (death per 100,000 live births) <sup>1</sup>	25.6	2012
Adult Mortality Rate <sup>2</sup> (probability of 15 year old dying before age 60 if subject to current age-sex mortality rate)	127 (Males 169; Females 86)	2013

<sup>1</sup> Ministry of Health, 2014b

<sup>2</sup> World Health Organisation, 2015





# 2

## **THE MALAYSIAN HEALTHCARE SYSTEM**

**HUMAN RESOURCES  
FOR HEALTH COUNTRY  
PROFILES 2015  
MALAYSIA**



## 2. The Malaysian Healthcare System

### 2.1. Health strategies, objectives, and legislation

The Ministry of Health has an overall responsibility for the health sector including: formulating policies, legislation, strategic planning, resource mobilization and allocation, monitoring, evaluation, research, training, and coordination of external aid.

Malaysia's current health plan is outlined in its Country Health Plan (10<sup>th</sup> Malaysia Plan) 2011-2015 while the plans for the immediate future are being set out in the 11<sup>th</sup> Malaysia Plan 2016-2020 (Economic Planning Unit 2015b). The main goals are to improve the quality of healthcare services and to provide universal access. Several strategies have been identified (Economic Planning Unit 2015c), namely:

- a) enhancing targeted support, particularly for underserved communities:
  - ❖ Expanding Healthcare Services to Rural and Remote Areas,
  - ❖ Implementing Domiciliary Healthcare in Community Setting,
  - ❖ Establishing Integrated Primary Healthcare Teams.
- b) improving system delivery for better health outcomes:
  - ❖ Reviewing and Formulating Legislations and Policies,
  - ❖ Enhancing Multi-sectorial Efforts in Healthcare Delivery,
  - ❖ Implementing Lean Management for Healthcare,
  - ❖ Implementing the Hospital Cluster Concept,
  - ❖ Improving Pre-hospital Care,

- ❖ Strengthening ICT Readiness and Integration through eHealth,
  - ❖ Intensifying Research and Development and Commercialisation,
  - ❖ Enhancing Safety for Patients and Healthcare Personnel.
- c) expanding capacity to increase accessibility:
    - ❖ Addressing Healthcare Personnel Shortage and Unequal Distribution,
    - ❖ Improving Capacity Building Programmes,
    - ❖ Building New and Upgrading Healthcare Facilities.
  - d) Intensifying collaboration with private sector and NGOs:
    - ❖ Engaging the Private Sector,
    - ❖ Strengthening the Role of NGOs,
    - ❖ Enhancing Community Empowerment and Mobilisation Programme,
    - ❖ Strengthening Health Promotion in Schools
    - ❖ Establishing Traditional and Complementary Medical outpatient units in the Government healthcare facilities

Several of these strategies have implications for HRH. Illustrative examples of the activities involving HRH that are envisioned for the next Plan period include:

- (a) integration of health enforcement units in MOH, in areas such as pharmaceutical, food safety, disease control and cleanliness as well as medical practice and professionalism,

- (b) development of a national data warehouse (that) will be developed in phases to collect, consolidate and analyse data from all healthcare providers in the country,
- (c) further development of human capital for health to ensure sufficient supply of competent and skilled healthcare personnel, measures to retain personnel in selected specialised areas and specialise in critical areas and work in underserved areas and remote locations
- (d) review of regulations to allow healthcare personnel from private sector to practice in public healthcare
- (e) encouragement for retirees with relevant skills and specialisation to serve in public facilities

## 2.2. Service delivery model

The Malaysian health sector is served by both public and private providers, who deliver a range of services that complement each other. The public system, which is funded through the general tax, delivers most of the highly subsidized hospital services, primary healthcare services, health promotion and disease prevention services. It provides universal healthcare coverage to the population.

The private sector delivers mainly personal and curative services and they are concentrated in the urban areas. They are being funded through fee-for-service mechanism mainly by individuals, private health insurance or corporations. Participation in private health insurance is becoming more prevalent. In 2012, 7% of health expenditure was financed by private health insurance (Ministry of Health 2014a).

Planners and implementers use an inter-agency collaboration platform to communicate issues and share information to improve the delivery of healthcare services. Consumers participate in improving service delivery through representatives in Hospital Boards of Visitors and Advisory Panels for Health Clinics in the public sector. The general public also use news media and local representatives of political parties to provide feedback, and such feedback are reviewed and responded to by managers at different levels of the healthcare system.

## 2.3. The provider network

The public sector delivers a range of primary care services through health and community clinics, including outreach services through mobile clinics to remote villages. It also delivers secondary care and tertiary care through hospitals. The private sector delivers health services through medical and dental clinics and hospitals. Palliative and hospice care are also provided in some facilities of the public and private for profit and not-for-profit sector.

Traditional and Complementary Medicine (T&CM) has a long history of provision in the private sector through one private T&CM hospital in Malaysia, a handful of larger outpatient T&CM health centres and a large number of stand-alone private practitioners. However, T&CM is still in its infancy for aspects such as legislation and integration into public healthcare delivery. Furthermore, the diversity of T&CM in Malaysia poses a great challenge in regulating and developing the industry.







3

**HEALTH  
WORKFORCE**  
SUPPLY AND TRENDS

HUMAN RESOURCES  
FOR HEALTH COUNTRY  
PROFILES 2015  
**MALAYSIA**





## 3. Health Workforce supply and trends

### 3.1. Human Resources For Health (HRH) supply

In the context that Malaysia aims to achieve “developed” country status by the year 2020, the Malaysian profile of HRH stock can be compared to two groups of countries. First, are selected countries that have a per capita income (in Purchasing Power Parity (PPP) International \$) similar to Malaysia. Examples are Brazil, Turkey, Chile, Mexico, Argentina and South Africa.

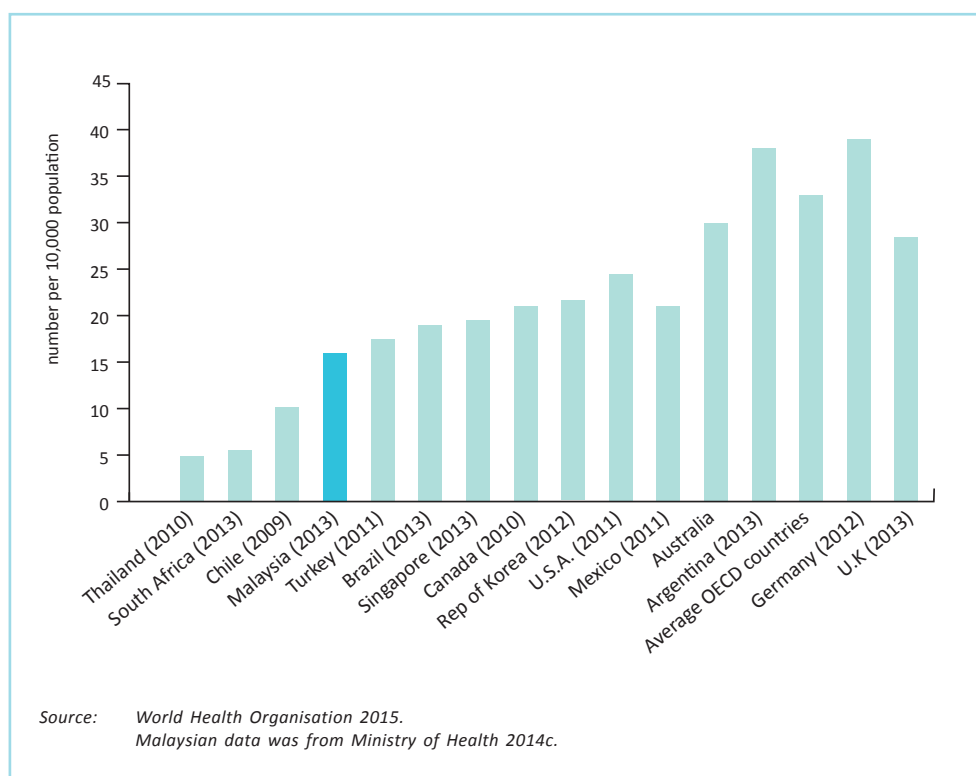
Second, are selected OECD countries such as Canada, Australia, UK, Germany and U.S.A and high income “developed” Asian countries, such as Singapore, Republic of Korea. This section provides such comparisons. Figure 1 - 4 shows the

comparative number of personnel per 10,000 population for Doctor; nursing and midwifery personnel; pharmacists and dental practitioners respectively.

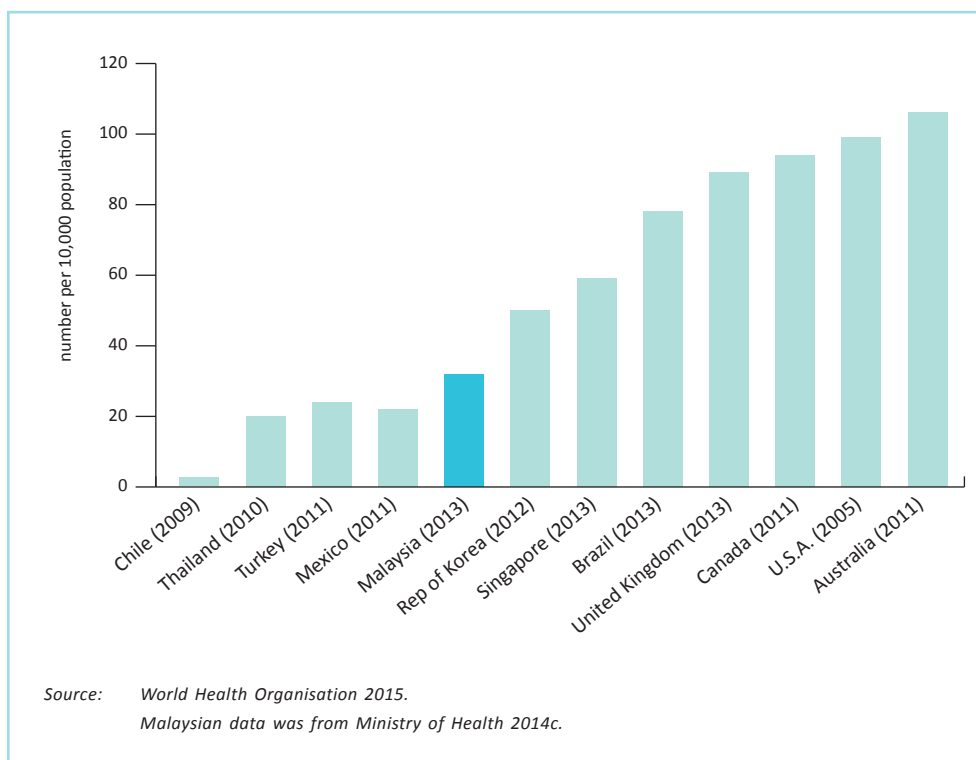
The current numbers of personnel per 10,000 population for Doctors, nursing personnel, pharmacists and dental practitioners is low compared to the selected countries. For Doctors, it is at the lower end of the comparison countries, while for the other three categories, it is about half or less than half of that in the comparison countries.

In interpreting the comparisons it is important to recognise that the age structure and illness patterns in Malaysia differ from those of the comparison countries, as does the healthcare delivery and financing system.

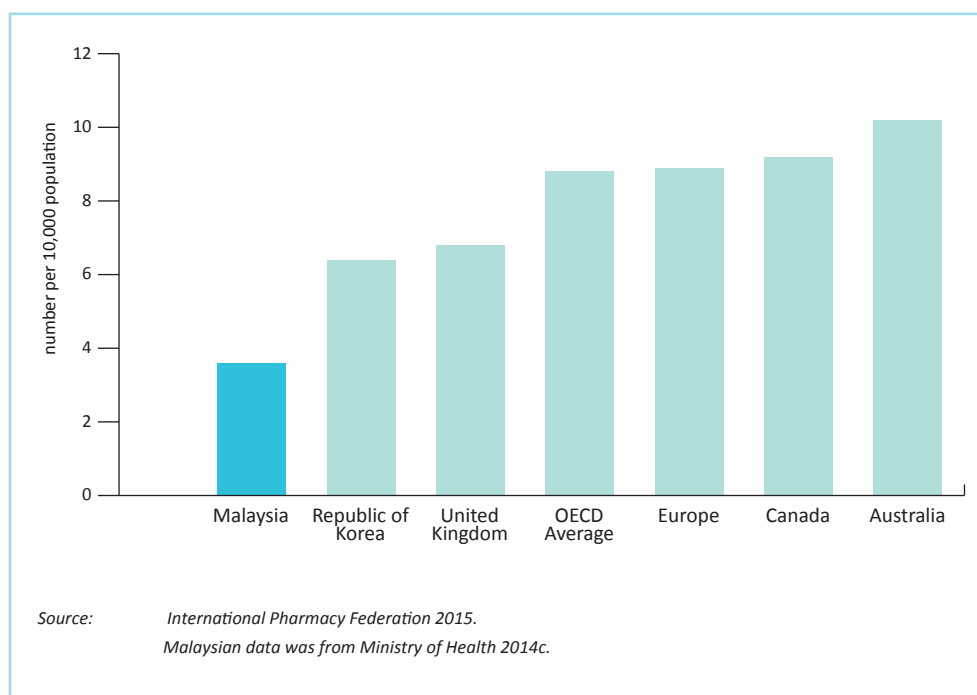
**Figure 1:** Number of Doctors per 10,000 population in selected countries



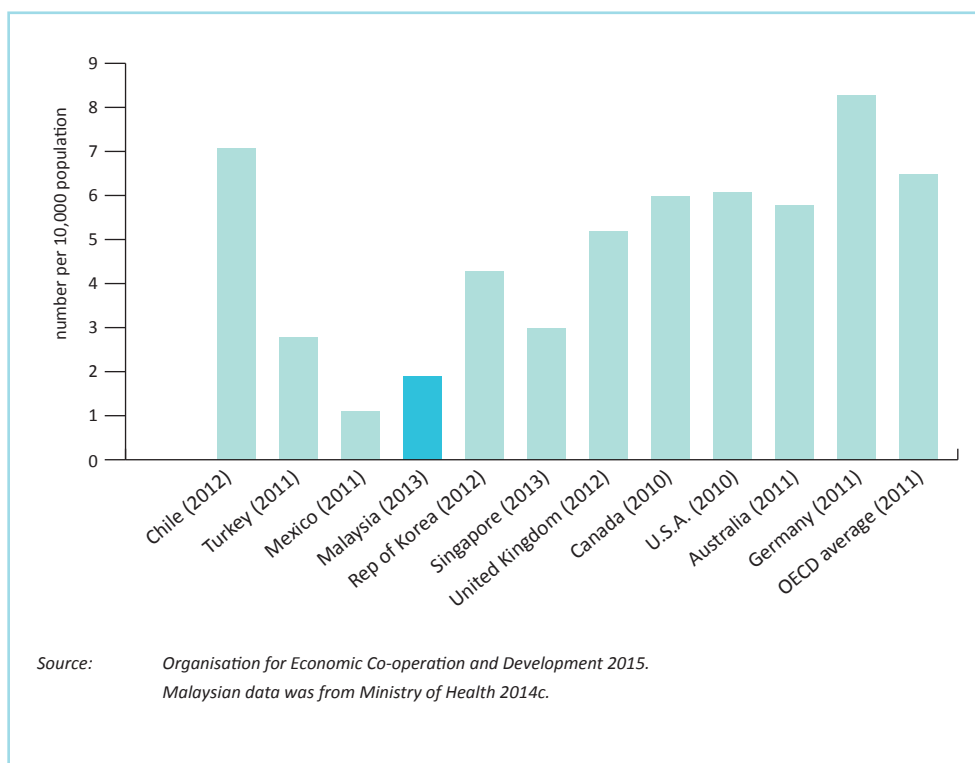
**Figure 2:** Number of Nursing and Midwifery personnel per 10,000 population in selected countries



**Figure 3:** Number of Pharmacists per 10,000 population in selected countries



**Figure 4:** Number of Dental Practitioners per 10,000 population in selected countries



## Specialist Doctors

There are two main groups of specialist Doctors in Malaysia, namely Clinical Specialists and Public Health Medicine Specialists. The Clinical Specialists include all specialists Doctors in hospital setting and Family Medicine Specialists in primary care settings. The Public Health Medicine Specialist mainly focuses on preventive medicine in all level of services.

For Clinical Specialist, Malaysia has only 3.42 specialists per 10,000 population compared to an average of 14.13 in a group of 8 selected OECD countries for which

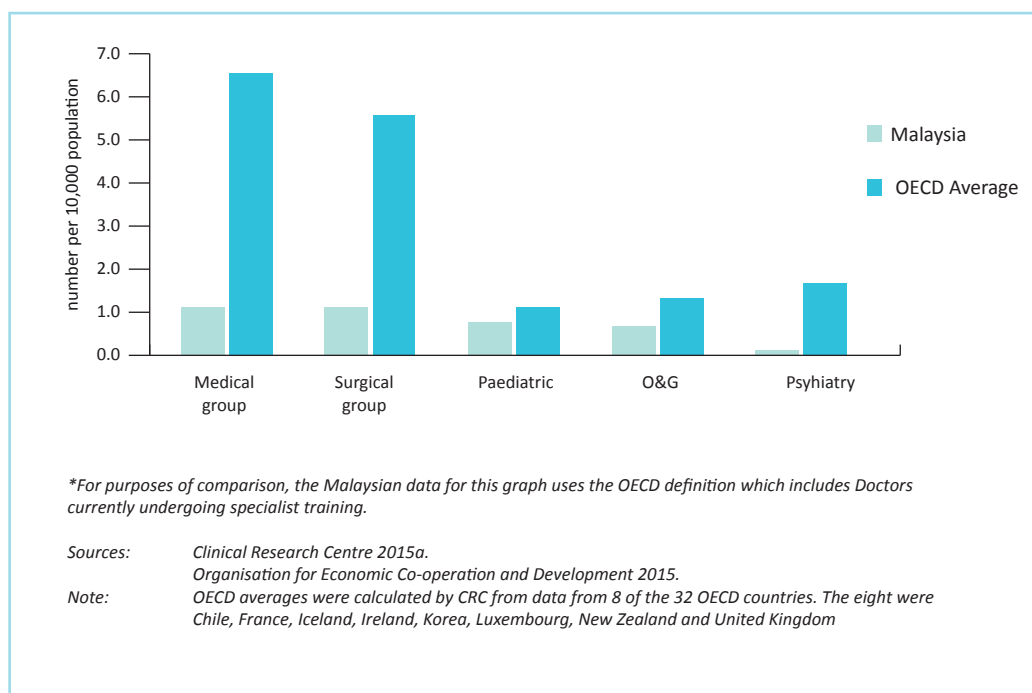
comparable data is available (see Table 2 and Figure 5). The Malaysian data however refers only for Clinical Specialists working in hospital settings. Since the number of Family Medicine Specialist is not many, the underestimate of the number of Clinical Specialist is not likely to be large.

The Public Health Medicine Specialist (PHMS) are employed largely by the MOH but some are also working in universities, Local Authorities and the Ministry of Defense. In 2014, there was 0.158 PHMS per 10,000 population, far lower than the international standard and in developed nations.

**Table 2:** Clinical Specialist per 10,000 Population: Malaysia and Selected OECD Countries, 2013

Specialty group		Number	Number per 10,000 Population
Medical	Malaysia	3,785	1.27
	OECD Average	7,026	5.69
Surgical	Malaysia	4,203	1.41
	OECD Average	14,818	4.91
Paediatricians	Malaysia	712	0.24
	OECD Average	3,200	0.91
Obstetricians & gynaecologists	Malaysia	1,054	0.35
	OECD Average	2,996	0.98
Psychiatrists	Malaysia	396	0.13
	OECD Average	4,133	1.31
Combined total	Malaysia	10,150	3.42
	OECD Average	44,092	14.13

Source: Clinical Research Centre 2015a. Organisation for Economic Co-operation and Development 2015.  
Note: Clinical Specialists includes trainee specialists in accordance with definitions used in the OECD data.

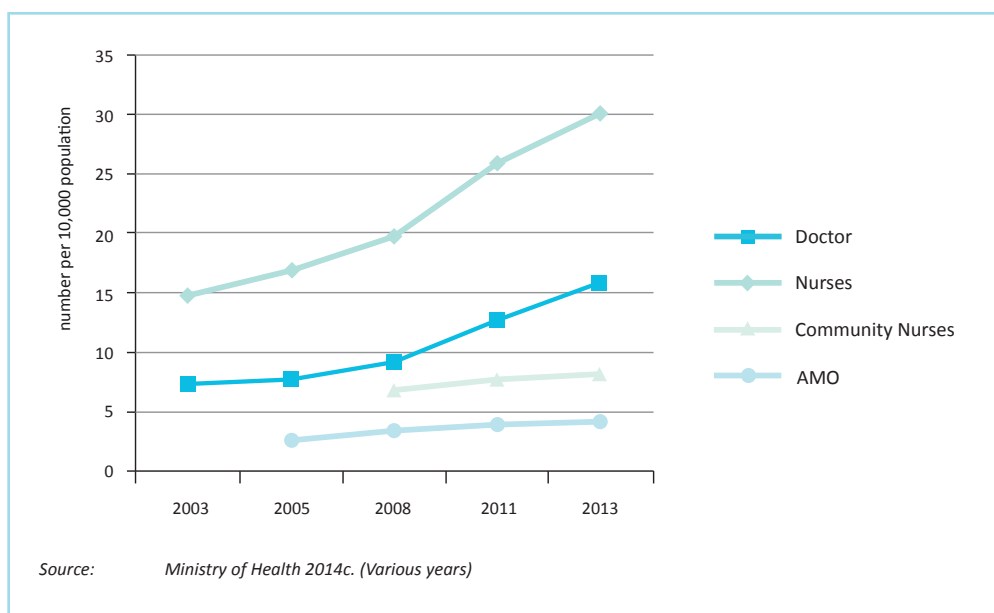
**Figure 5:** Clinical Specialist per 10,000 population, 2013\*

### 3.2. Recent trends

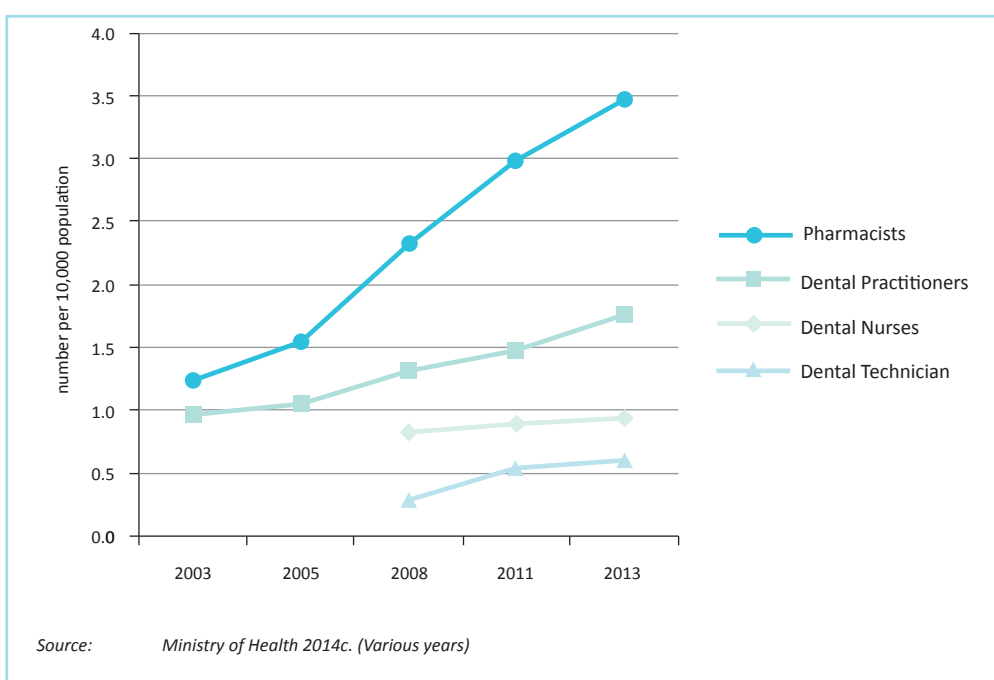
Since 2008, the increase in numbers of Doctors, nursing personnel, pharmacists and dental practitioners has rapidly out

stripped population growth, resulting in rapidly increasing stock (see Figure 6 and 7, and Table 3). In the two years period (2011-2013) since last reported, this trend has continued for all the four categories.

**Figure 6: Trends in Doctors and Nursing Personnel, 2003-2013**



**Figure 7: Trends in Dental Personnel and Pharmacists, 2003-2013**



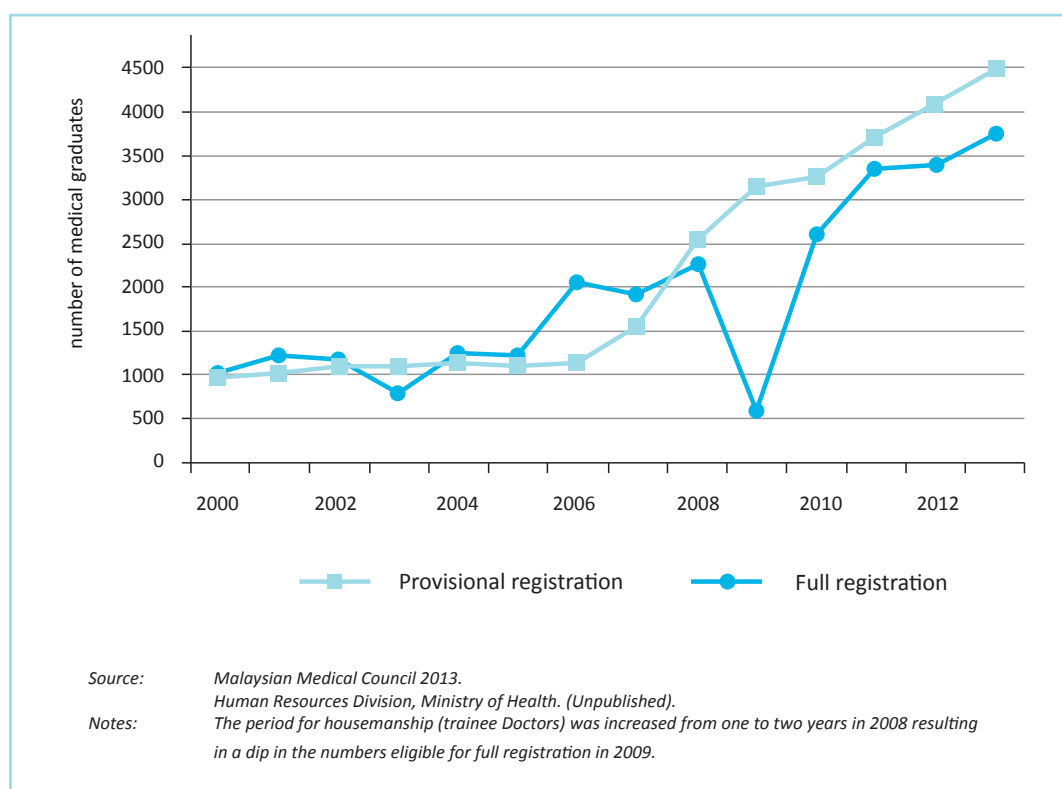
**Table 3:** Percentage increase in number of personnel per 10,000 population, 2008 - 2014

Personnel	2008	2014	Percentage of increase
Doctors	9.11	15.79 (2013)	73.3%
Dental Practitioners	1.32	1.96	48%
Pharmacist	2.32	4.08	76%
Nurses	19.66	30.79	57%
Assistant Medical Officer	3.19	4.09	28%

Source: Ministry of Health, 2014c. (Various years)

The rapid expansion of the workforce in recent years is due to the large numbers of new graduates entering the workforce

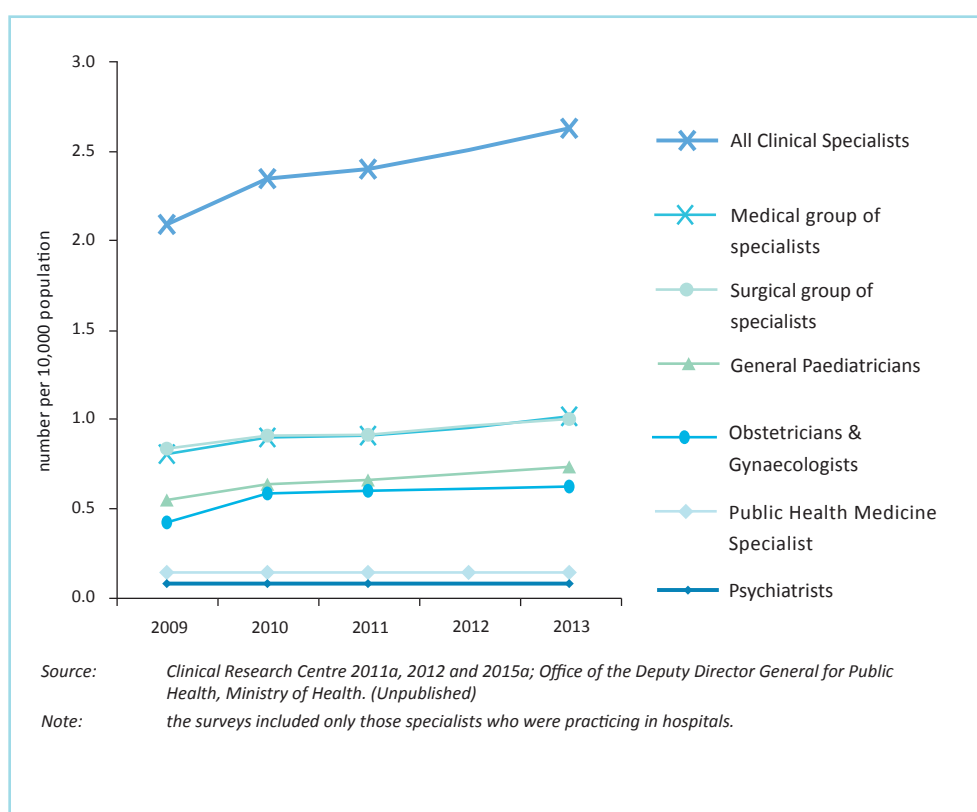
every year. For Doctors, this is illustrated in Figure 8.

**Figure 8:** Number of medical graduates entering the workforce, 2000 – 2013

The increase in number of specialist Doctors for the period 2009-2013, however, was much lower. For all categories of hospital-based Clinical Specialists combined, it was only 25%, with highest increase occurring

in Obstetrics and Gynaecology, and the lowest in Psychiatry (see Figure 9 and Table 4). [Note: Anesthetists are included in the surgical group].

**Figure 9:** Number of Specialist Doctors per 10,000 population, 2009 – 2013



**Table 4.** Percentage Increase in number of specialists Doctors per 10,000 population, 2009 - 2013

Specialist categories	2009	2013	Percentage of increase
Medical group	0.810	1.016	25.4%
Surgical group	0.832	0.996	19.7%
General paediatricians	0.546	0.725	32.6%
Obstetricians & gynaecologists	0.432	0.616	42.6%
Psychiatrists	0.077	0.090	17.0%
All Clinical specialists	2.09	2.62	25.1%
Public Health Medicine Specialist	0.137	0.155	13.1%

Source: Clinical Research Centre 2011a, 2012 and 2015a; Office of the Deputy Director General for Public Health, Ministry of Health. (Unpublished)

## Issues arising from the rapid increase of new graduates entering the workforce

As reported in the first report, the rapid increase of new graduates of Doctors, dental practitioners and pharmacists who

require a period of mentoring/training has placed a serious stress on the specialists who are responsible for supervising them, and on the health system capacity for supporting training (beds, patients, dental chairs, theatre facilities etc.).

### KEY MESSAGES

1. The current stock of key HRH categories is low compared to OECD countries. However, differences in population profile, morbidity patterns and health service delivery patterns need to be taken into account.
2. The greatest disparity is in specialist Doctors. The number of specialist Doctors has not increased greatly in the last couple of years
3. Recent rapid increase in new graduates entering the workforce has placed great stress on staff and clinical facilities that are required to supervise and train new entrants.







4

# **HEALTH WORKFORCE DISTRIBUTION**

**HUMAN RESOURCES  
FOR HEALTH COUNTRY  
PROFILES 2015  
MALAYSIA**



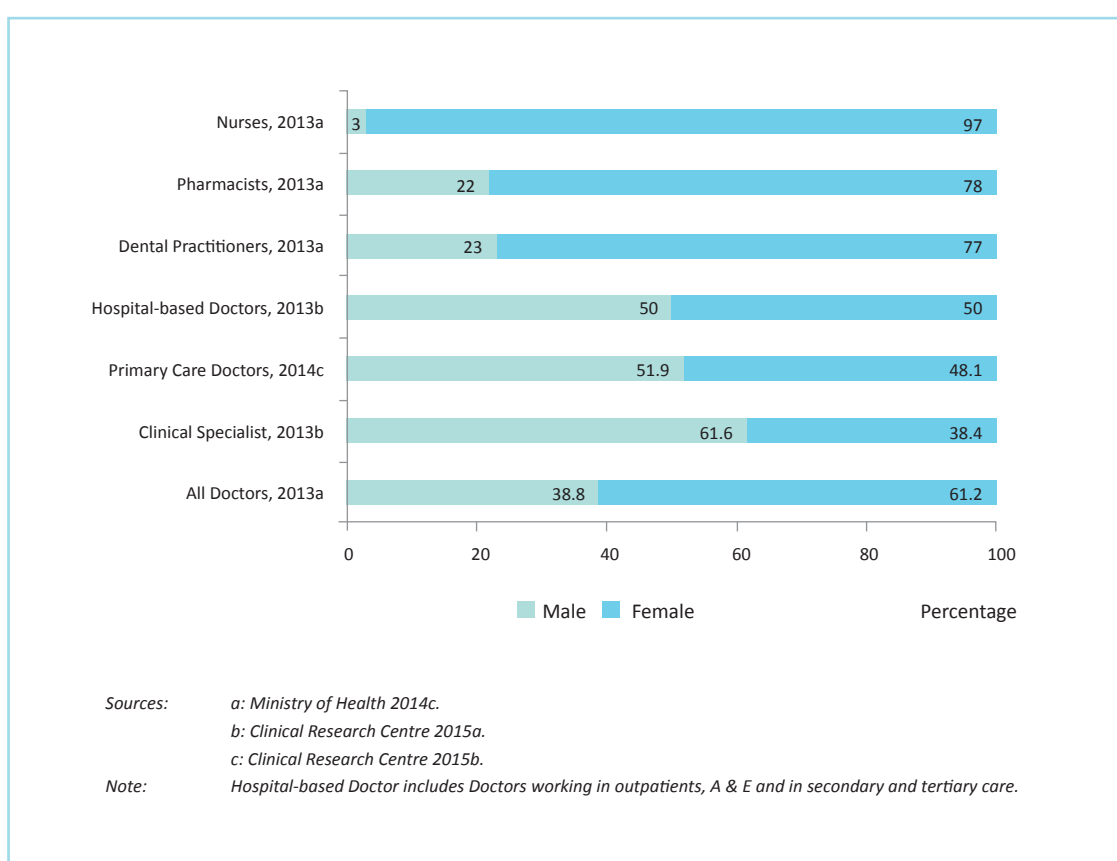
## 4. Health Workforce Distribution

### 4.1. Gender distribution

Females predominate in most categories of healthcare personnel, except Clinical Specialists. Nurses are almost entirely female (97%), while more than 75% of

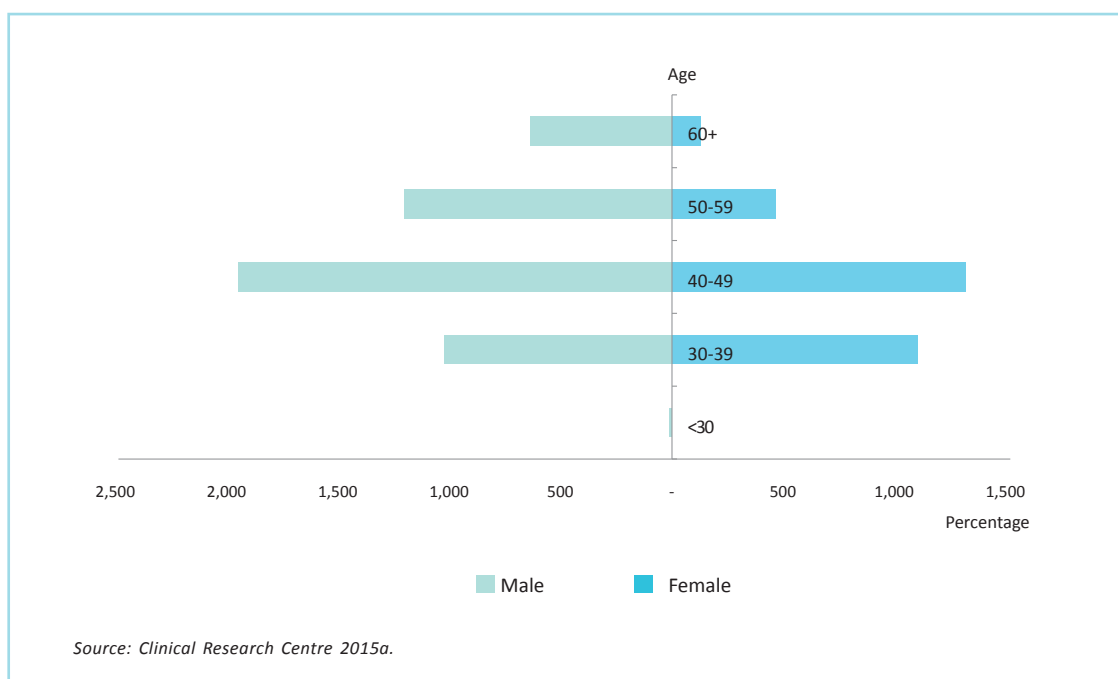
pharmacists and dental practitioners and about 60% of all Doctors are female. Primary care Doctors and hospital-based Doctors have 50% female, while among Clinical Specialist, only 39% are female (see Figure 10).

**Figure 10:** Healthcare personnel distribution by sex



Among Clinical Specialists, there are more males in the older age groups, but in the youngest age group (30-39), there are

slightly more females than males, reflecting, perhaps the beginning of feminisation of the Clinical Specialist category (see Figure 11).

**Figure 11:.** Number of Clinical Specialist by age and sex, 2013

For other categories of HRH who are employed by the Ministry of Health, females predominate in every category except AMO and Genetists (see Tables 37-44). Among those T&CM practitioners who have registered with the MOH, there are more

males than females with the exception of Traditional Malay Medicine practitioners and Complementary Medicine practitioners where there are more female than male practitioner (see Table 5).

**Table 5:** Number of Traditional and Complementary Medicine (T&CM) Practitioners by sex, 2014

	Male	Female	Total
Traditional Malay Medicine	849	1179	2028
Traditional Chinese Medicine	5557	2678	8235
Traditional Indian Medicine	24	29	53
Islamic Medical Practice	401	60	461
Homeopathy	222	100	322
Complementary Medicine	885	1093	1978
Total	7938	5139	13077

Source: Traditional and Complementary Medicine Division, Ministry of Health. (Unpublished).

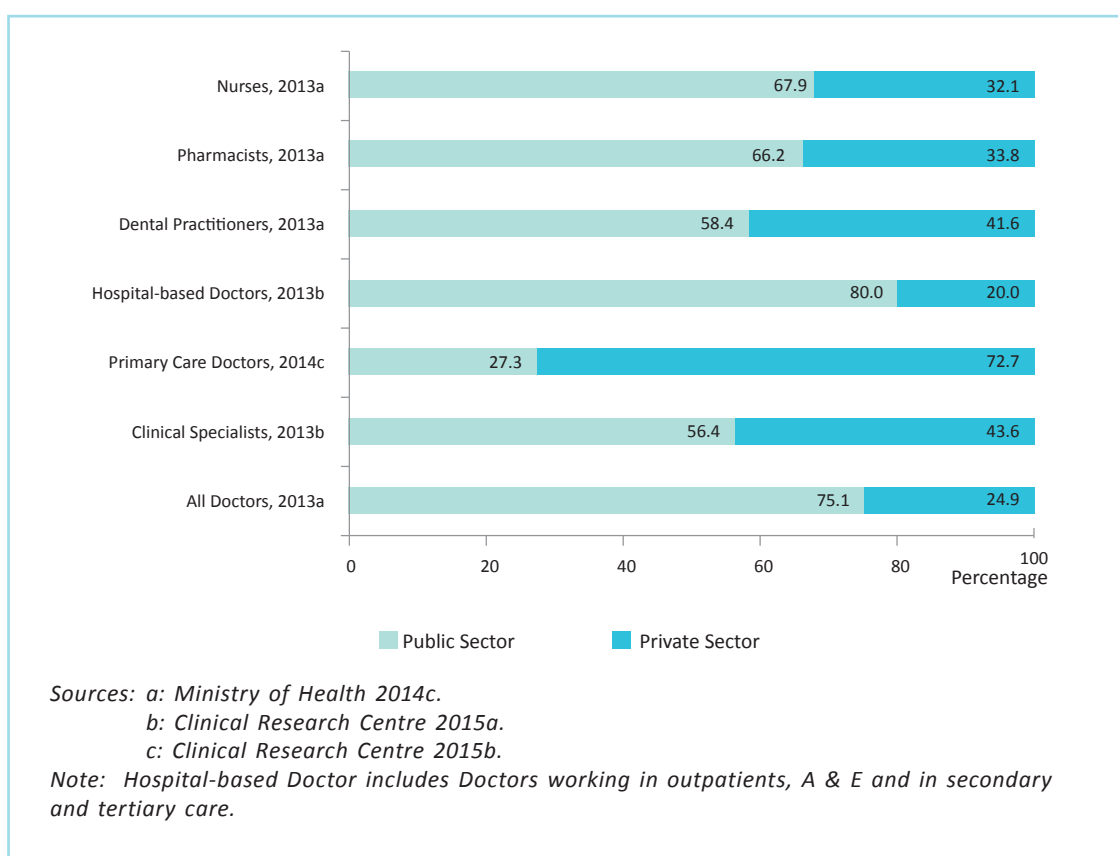
Note. Data is limited to those who have registered voluntarily with the MOH.

## 4.2. Public-Private Distribution

The majority of Doctors, dental practitioners, pharmacists and specialists work in the public sector. The exceptions are Doctors

who work in stand-alone clinics (clinics which are not based in hospital) that provide primary care, where almost 3 out of 4 such Doctors are in the private sector (see Figure 12).

**Figure 12:** Healthcare personnel distribution by sector

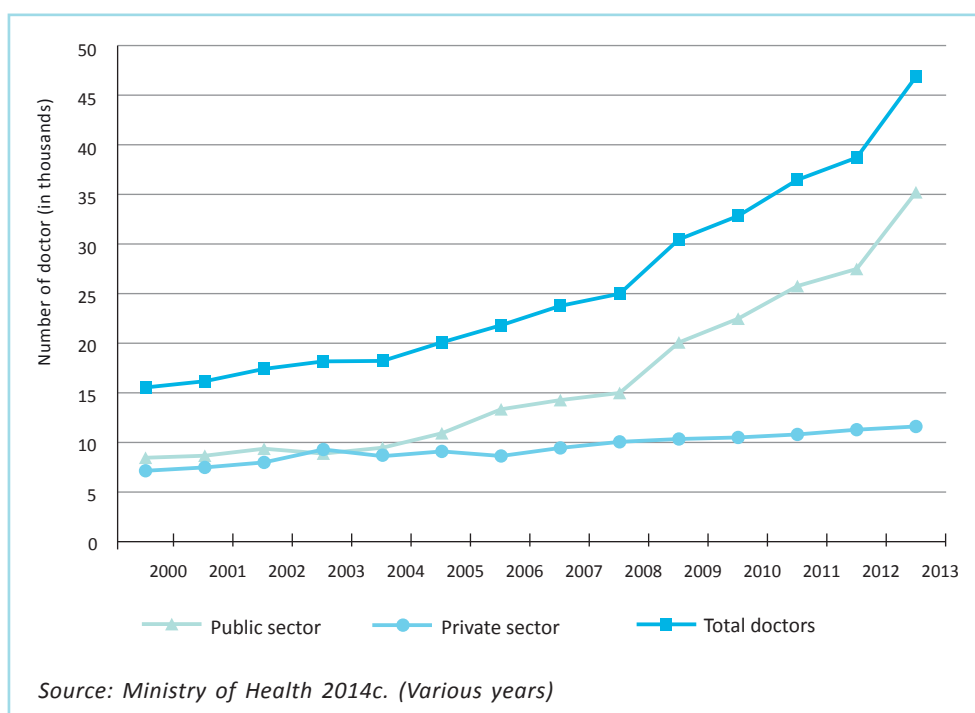


In contrast, 80% of hospital-based Doctors (including those who provide either primary care, accident and emergency or work in wards), and 56% of specialist Doctors work in the public sector.

### 4.2.1. Doctors

There has been a rapid growth of Doctors in the public sector (see Figure 13). In 2013, the ratio of Doctors in public sector

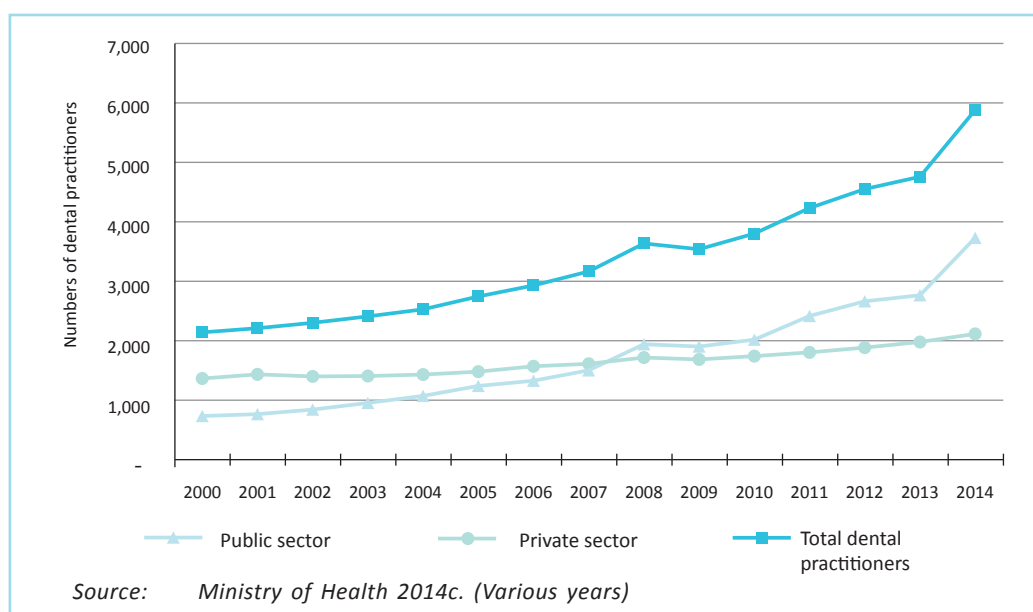
to private sectors was 3:1, compared to 1:1 in 2000. The changing pattern is due to the large numbers of new graduates who entered the workforce during 2008 – 2011, mainly because regulations require them to work in the public sector for two years as house officers (i.e. trainee medical practitioners) and a further two years in compulsory public sector service. The housemanship period was increased from one to two years in 2008.

**Figure 13:** Number of Doctors by sectors, 2000 – 2013

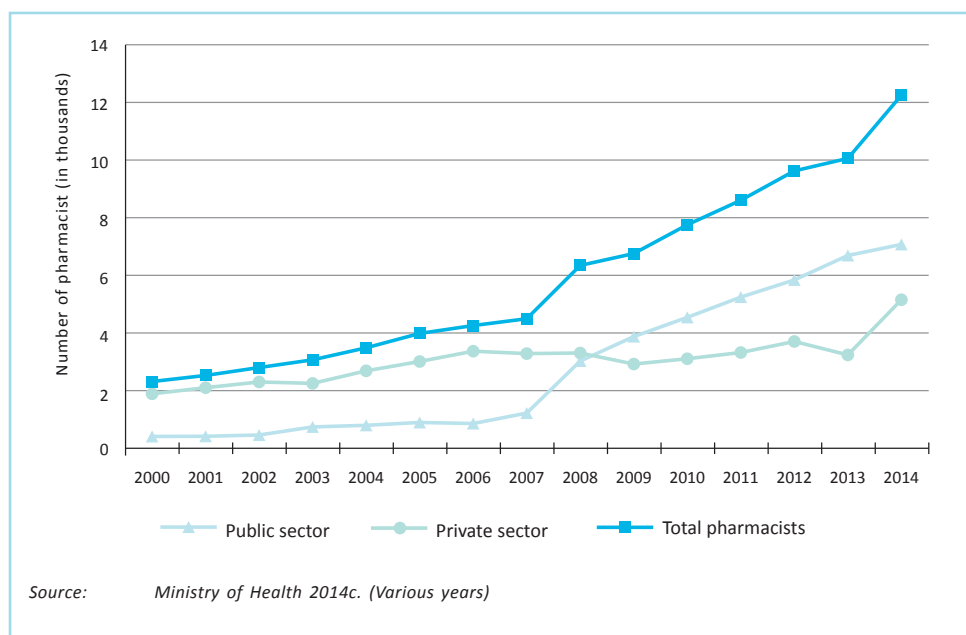
#### 4.2.2. Dental practitioners and Pharmacists

In 2014, the public/private ratio for dental practitioners was 1.7 to 1 and for pharmacists was 3 to 1. The recent

rapid growth of the public sector for both categories (see Figure 14 and 15) is also due to the large numbers of new graduates entering the workforce and regulations requiring them to serve an initial period in the public sector.

**Figure 14:** Number of dental practitioners by sectors, 2000 – 2014

**Figure 15:** Number of pharmacists by sectors, 2000 – 2014



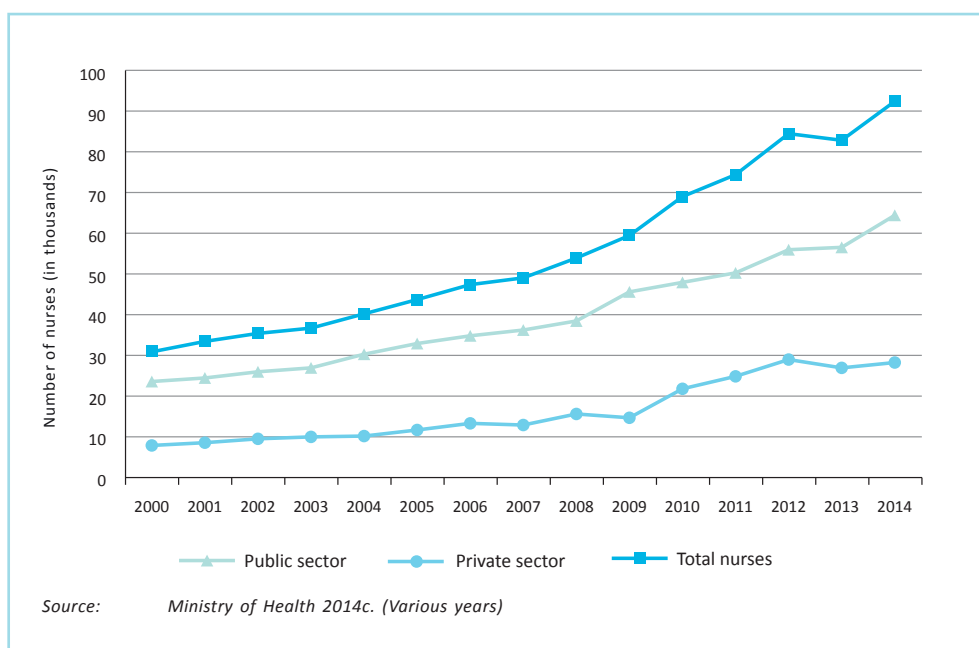
#### 4.2.3. Nurses

Among Nurses, the public-private ratio was about 2.3 to 1 in 2014, which is slightly lower than 3:1 in 2000. After 2008, the rate of increase in the private sector has accelerated (see Figure 16).

#### 4.2.4. Clinical Specialist (Hospital-Based)

In 2013, 56% of hospital-based Clinical Specialist were in the public sector (see Table 6), and the trend has not changed much during the period 2009 – 2013 (see Figure 17).

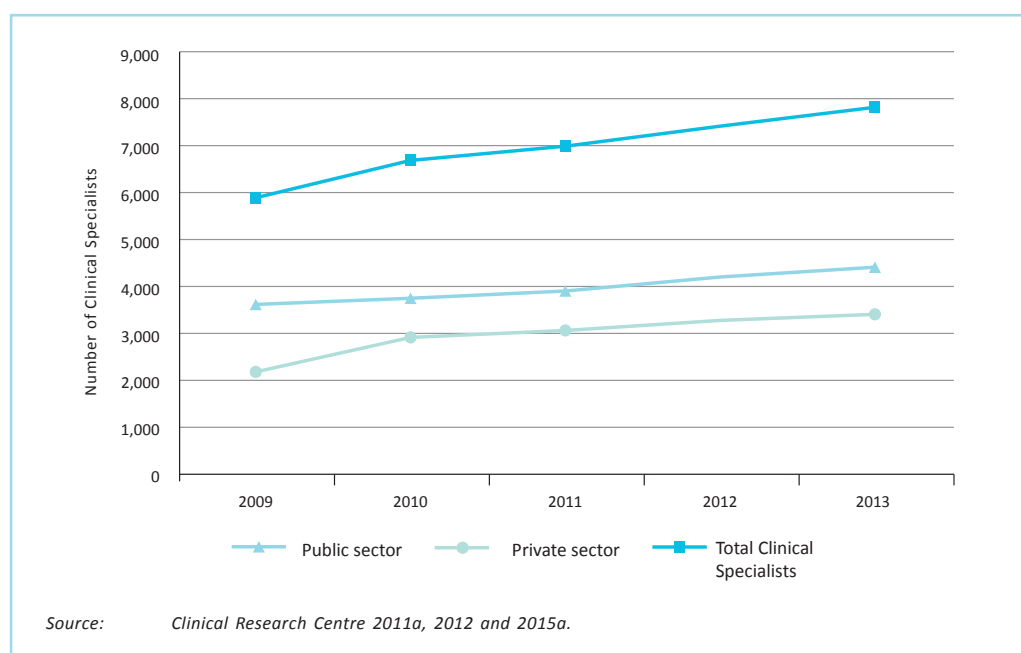
**Figure 16:** Number of Nurses by sectors, 2000-2014



**Table 6.** Number of Clinical Specialist by sectors, 2009 - 2013

	2009	2010	2011	2012	2013
Public	3,649	3,768	3,914	-	4,427
Private	2,195	2,928	3,082	-	3,412
Total	5,889	6,696	6,996	-	7,839

Source: Clinical Research Centre 2015a.

**Figure 17:** Hospital-based Clinical Specialist, 2009 – 2013

## 4.3. Age distribution

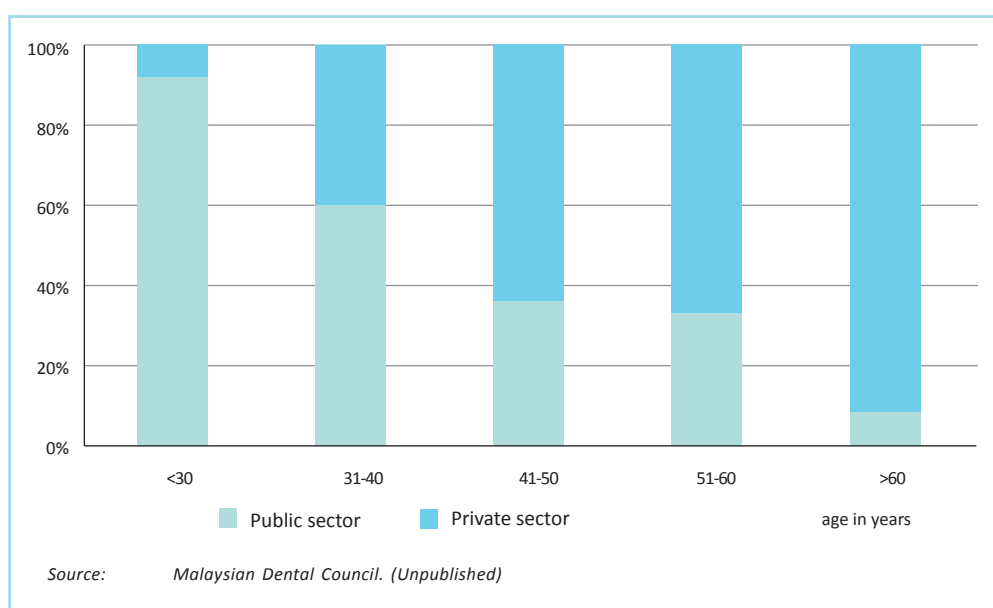
The data available for sector-wide age distribution for HRH is limited to dental practitioners (section 4.3.1) and selected categories of Doctors (section 4.3.2). For all other categories (section 4.3.3), data is available only for HRH employed by MOH and excludes HRH in other public sector agencies and the private sector.

### 4.3.1. Dental practitioners

Below age 30, dental practitioners are predominantly in the public sector, but in the next age group of 30 -39 only 60% are in the public sector (see Figure 18). The proportion in the public sector decreases rapidly with each successive age group.



**Figure 18:** Dental practitioners distribution by age-groups and sectors, 2014



### 4.3.2. Doctors

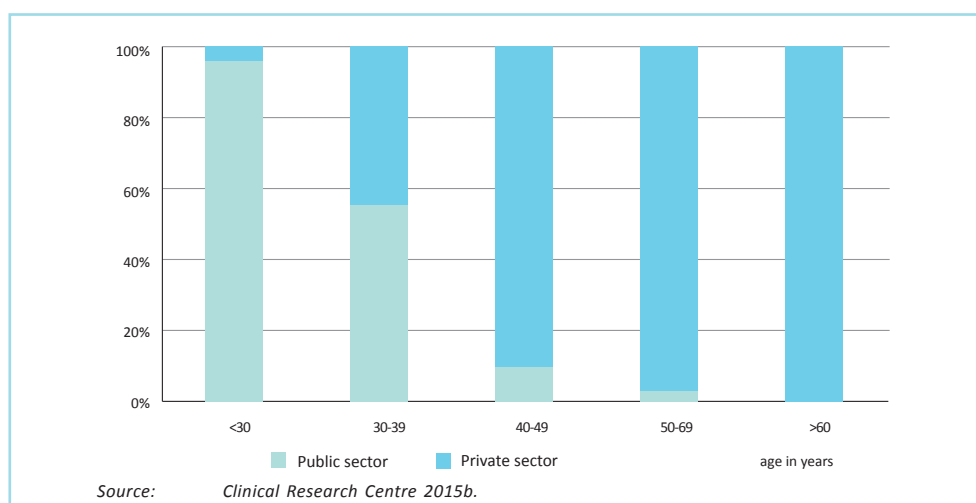
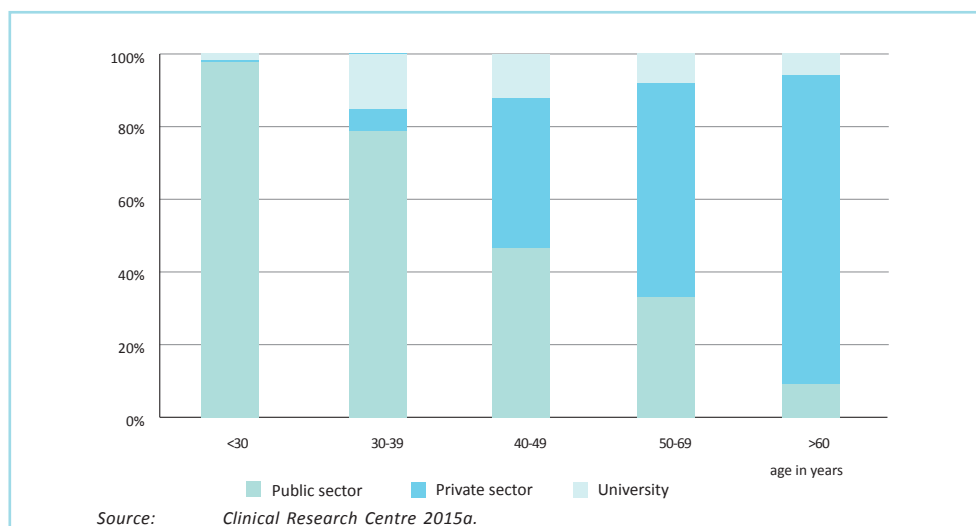
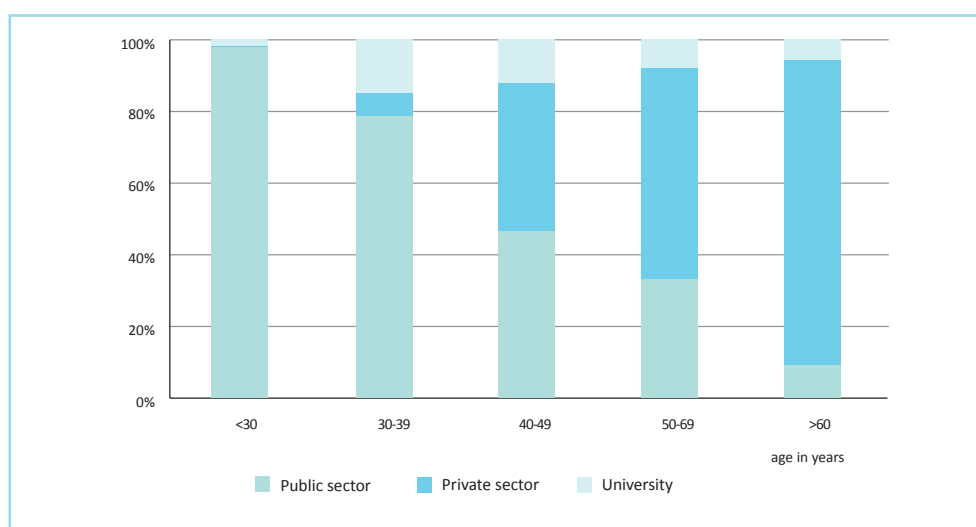
Sector-wide age data for Doctors is available only for (a) Doctors working in primary care clinics (public and private) that are not attached to a hospital; (b) hospital-based Doctors; both non-specialist and specialists (public and private); and (c) specialists working in hospitals (public and private). It is important to recognise that a considerable proportion of primary care is provided in hospital outpatient departments in the public sector, but data is not available regarding the Doctors working in such departments.

For each of the categories mentioned above, younger Doctors are predominantly in the public sector while older groups are in the private sector. The shift to the private sector begins in the 30+ age group for primary care Doctors, and in the 40+ age group for specialists (see Figure 19-21).

Below age 30, almost all Doctors are in the public sector. In the 30 – 39 age group, about 50% of primary care Doctors

are in the private sector, but only 10% of specialists. In the 40-49 age group, 90% of primary care Doctors and slightly more than 50% of specialists are in the private sector. Since the retirement age for the public sector was 56, not surprisingly, the private sector predominates after age 50. Since 2011, the public sector compulsory retirement age has been increased to 60.

Among specialists, only 7% are in the private sector in the below-40 age group, whereas in the 40-49 age group 44% are in the private sector (see Figure 21). This distribution reflects the career path of Doctors, whereby most graduates in their mid-twenties, serve the next four years in the public sector as house-officers and in compulsory service, followed by a further four or more years in the public sector while training in their specialty. When they are fully qualified specialists, a sizeable proportion takes the option of moving to the private sector.

**Figure 19:** Primary care Doctors distribution by age-groups and sectors, 2014**Figure 20:** Hospital-based Doctors distribution by age-groups and sectors, 2013**Figure 21:** Clinical Specialist distribution by age-groups and sectors, 2013

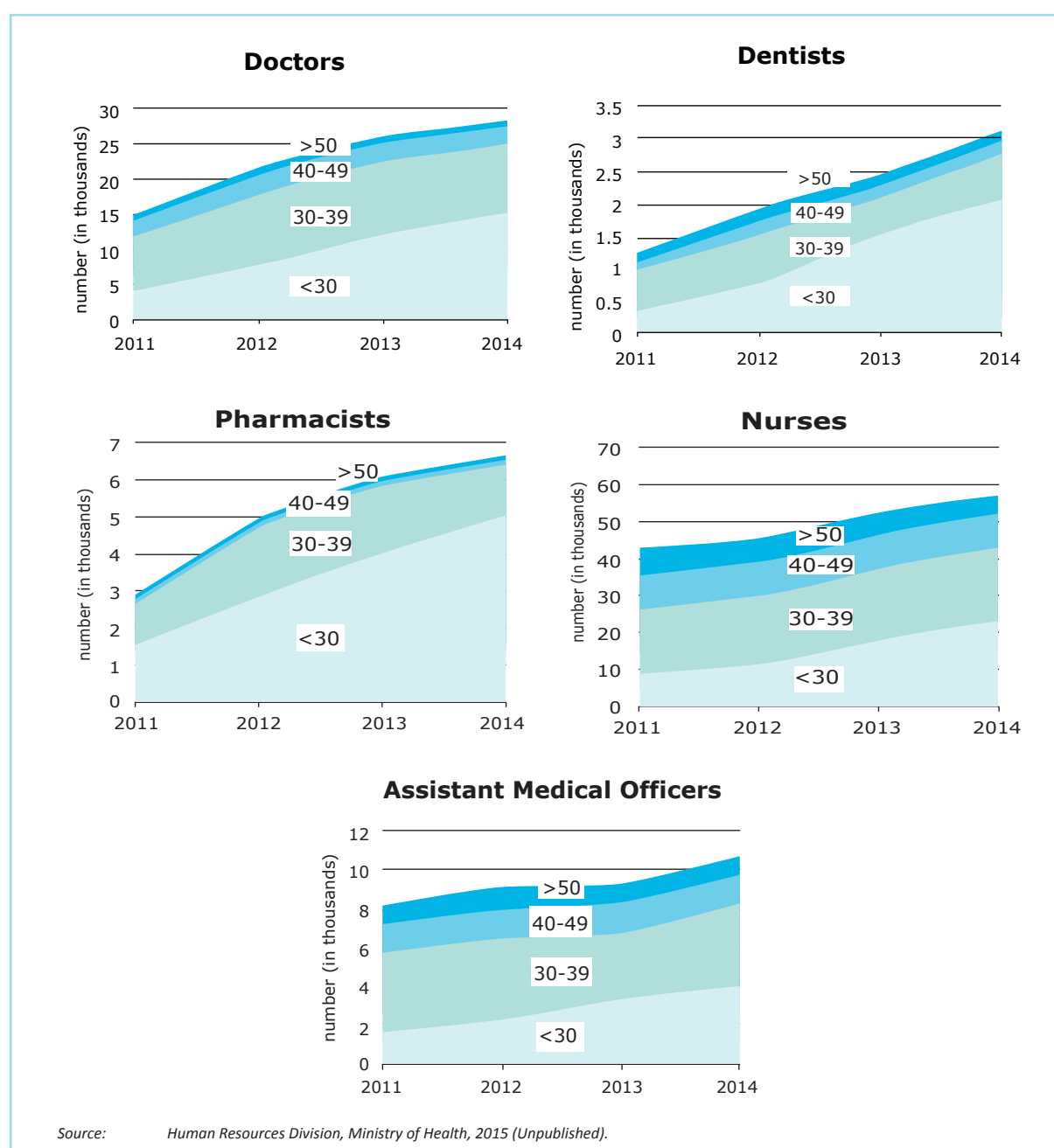
### 4.3.3. HRH Employed by MOH: Recent Trends in Age Distribution

The health workforce employed by the MOH is essentially young. Among HRH employed by the MOH, during the period 2011 – 2014 there has been a sharp increase in the proportion of Doctors, dental practitioners,

pharmacists, AMO and Nurses who are below the age 30 (see Figure 22).

In contrast, among Nurses and Assistant Medical Officers, a substantial proportion of the workforce are in the 30-39 age group. For other categories such as Allied Health officers, Tables 42-44 illustrate that the large majority are below the age 40.

**Figure 22:** Trends in age distribution of healthcare personnel working in MOH, 2011-2014



## 4.4. Geographic Distribution

### 4.4.1. Regional distribution of selected healthcare personnel in 2014

The west coast region of Peninsular Malaysia continues to have the highest number of personnel per 10,000 population for Doctors, Nurses, and pharmacists, but for dental

practitioners, the east coast region have caught up. In contrast, for the assistant medical officers, community Nurses, dental Nurses and assistant pharmacists, Sabah, Sarawak and the east coast region of Peninsular Malaysia have higher number of personnel per 10,000 population than the west coast region (see Table 7).

**Table 7:** Number of healthcare personnel per 10,000 population by region, 2014.

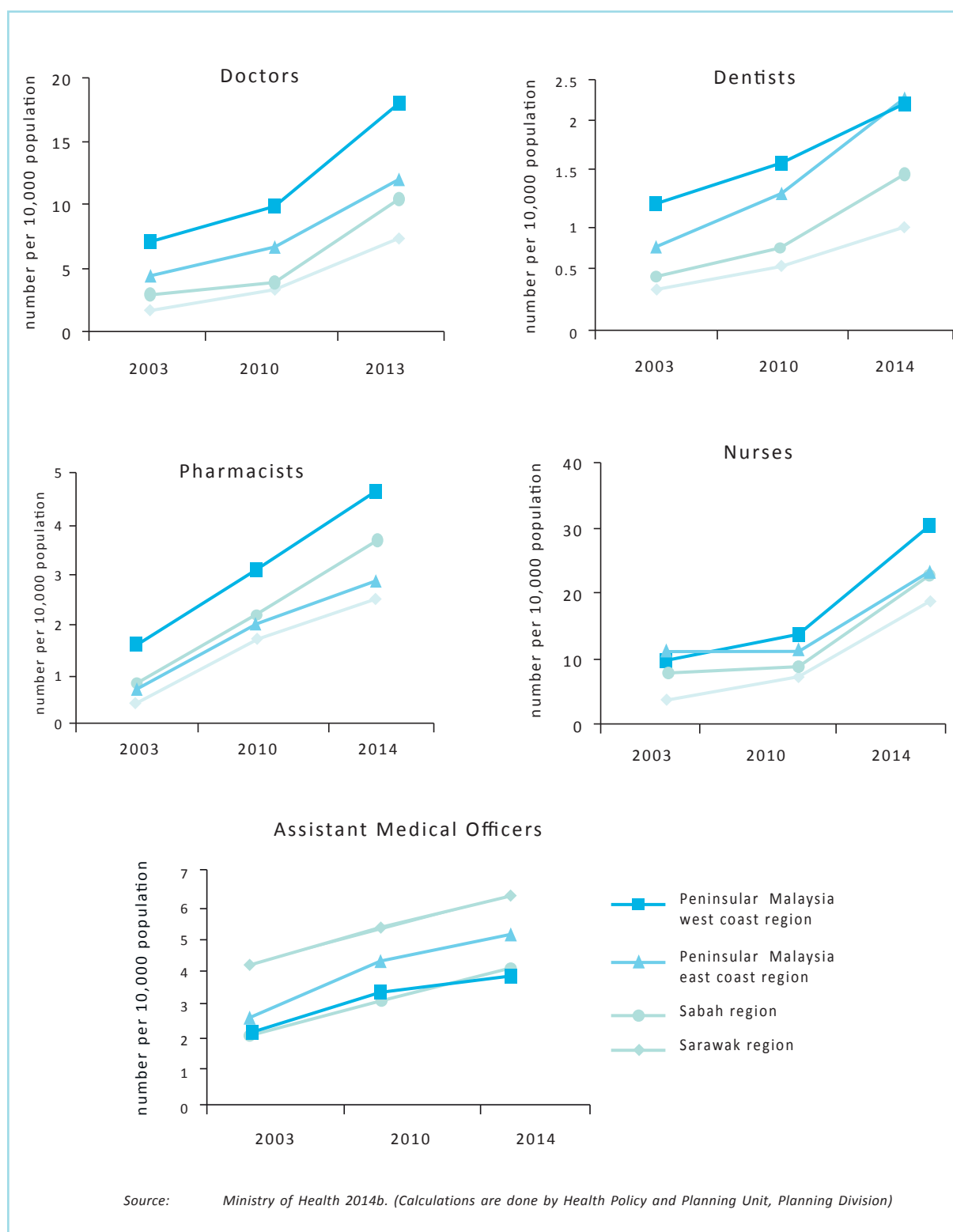
Category	Peninsular Malaysia west coast region	Peninsular Malaysia east coast region	Sabah region	Sarawak region
Doctors (2013)	17.91	11.98	7.38	10.45
Dental Practitioners	2.14	2.21	0.99	1.49
Pharmacists	4.7	2.87	2.53	3.7
Assistant Medical officers	3.8	5.1	4.1	6.3
Nurses	32.2	25.3	20.4	24.5
Community Nurses	6.77	11.16	11.29	12.26
Dental Nurses	0.72	1.2	1.06	1.58
Assistant Pharmacists	1.62	1.92	1.51	1.88

### 4.4.2. Recent Trends in Regional Distribution of Doctors, Dental practitioners, Pharmacists and Nurses

In all the regions, during the period decade of 2003 – 2014, there was an increase in the number of Doctors, Dental practitioners, Pharmacists and Nurses per

10,000 population. Generally the west coast region have done best, followed by the east coast region, then Sarawak and lastly Sabah. However, during 2011 – 2014, Sarawak overtook the east coast region for pharmacists, and narrowed the gap for Doctors and Nurses. Similarly, the east coast region have overtaken the west coast region for dental practitioners (see Figure 23).

**Figure 23:** Number of healthcare personnel per 10,000 population by region, 2003, 2011 and 2014

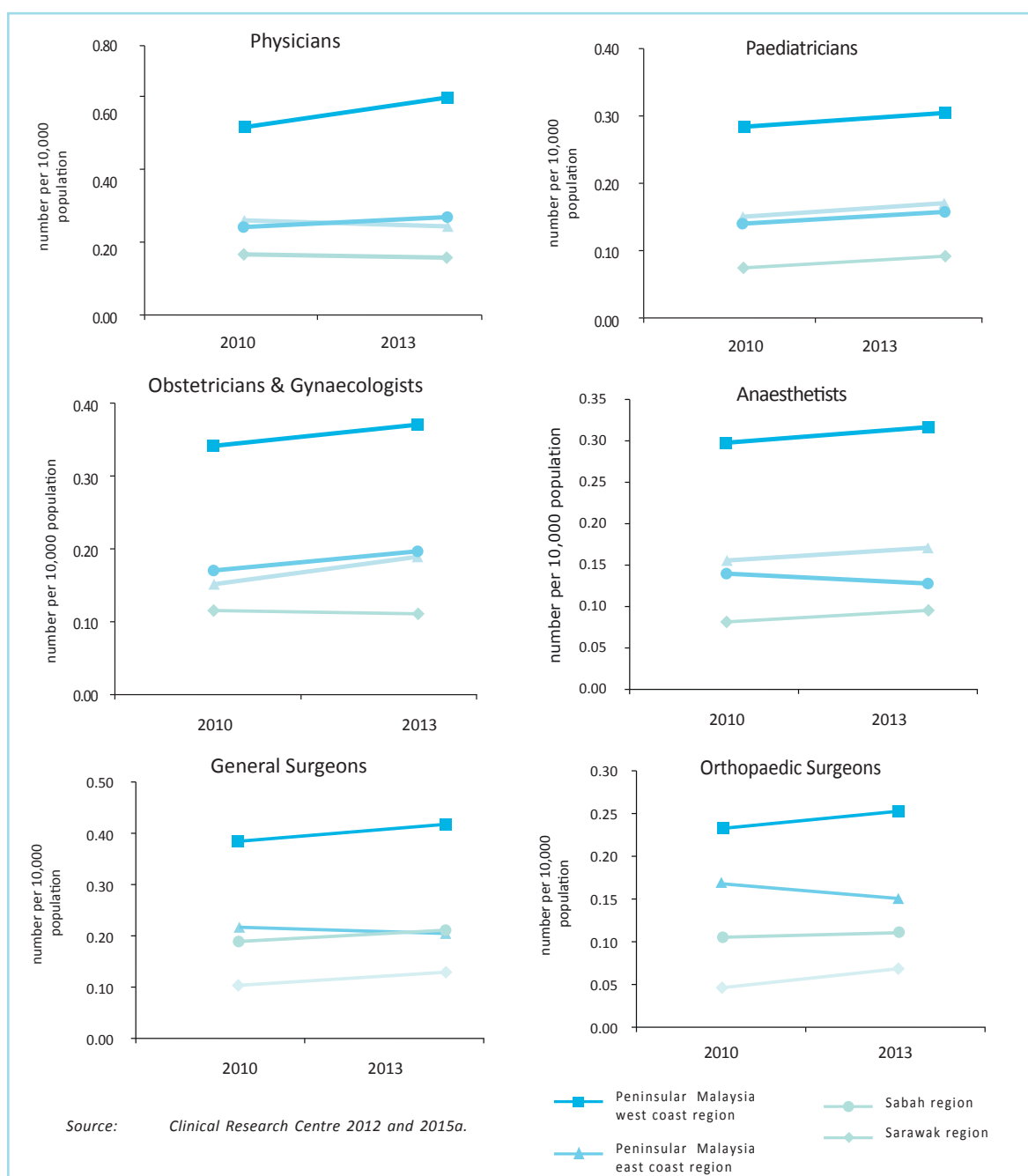


#### 4.4.3. Clinical Specialists: 2010 and 2013

The west coast region of Peninsular Malaysia have a higher number of specialists per 10,000 population than the other regions in Malaysia (see Figure 24). The east coast region and Sarawak have similar number per 10,000 population for most specialties, with an exception of orthopaedic surgeons,

where the east coast region have a higher number per 10,000 population. Sabah has the lowest number of specialists per 10,000 population for all specialties. All regions have seen an increase in most categories of specialists since 2010. The exceptions are slight decreases in anaesthetists in Sarawak, and surgeons, orthopaedic surgeons and physicians in the east coast region.

**Figure 24:** Number of Clinical Specialists per 10,000 population by region, 2010 and 2013



#### 4.4.4. Public Health Medicine Specialist and Family Medicine Specialists

Public health service is responsible for extraordinary achievements since the independence, such as remarkable gains in life expectancy, declining maternal and child mortality and substantial reduction in infectious disease burden and mortality.

The official professional gazettelement for Public Health Medicine Specialist (PHMS) was initiated in 2000 and subsequently PHMS was recognised in 2011 as equivalent to other medical specialities. Among Public Health Medicine Specialist (PHMS), those in MOH headquarters are distributed between various national health programmes. Among the regions, the east coast region have the highest number per 10,000 population (see Table 8).

**Table 8:** Regional Distribution of Public Health Medicine Specialists Employed by the MOH, 2014

	Number	Per 10,000 population
Peninsular Malaysia West Coast <sup>1</sup>	207	0.11
Peninsular Malaysia East Coast	78	0.18
Sabah and Sarawak	53	0.09
MOH Headquarter	116	0.04
National level Institutions and laboratories	29	0.01
Cadre	1	-
All combined	477	0.158

Source: Office of the Deputy Director General for Public Health, Ministry of Health. (Unpublished)

<sup>1</sup> excluding the MOH Headquarters, National Level Institution and laboratories

Family Medicine is a relatively new area of specialization, and the number per 10,000 population in all regions is only about one-tenth of that of other major clinical specialties such as physicians and surgeons (see Table 9). The east coast region have a

higher number per 100,000 population than the other regions, although the number in Sabah and Sarawak has increased greatly. The low numbers of Family Medicine Specialists are placing a strain on the MOH policy to move patients towards primary care compared to hospital-based care.

**Table 9:** Regional Distribution of Family Medicine Specialists (per 100,000 Population) Employed by the MOH 2010-2012.

	2010	2011	2012
Peninsular Malaysia West Coast	0.06	0.07	0.07
Peninsular Malaysia East Coast	0.11	0.12	0.12
Sabah and Sarawak	0.02	0.02	0.06

Source: Family Health Development Division, Ministry of Health. (Unpublished)

## 4.5. Skill Mix

As noted in earlier sections of this report, the health workforce has increased considerably during the past few years. However, there

has been little change in the skill mix<sup>1</sup> for several key categories as illustrated in Table 10.

**Table 10:** Ratios of selected healthcare professional to the Allied Health Categories

	2011	2014*
Doctors to nursing personnel ratio	1:2	1:2
Doctors to AMO ratio	1:0.3	1:0.3
Dental practitioners to dental Nurses ratio	1:0.6	1:0.5
Pharmacists to Assistant Pharmacists ratio	1:0.4	1:0.4
Doctors to Medical Laboratory Technologists ratio	1:0.14	1:0.14
Dental practitioners to Dental Technologists ratio	1:0.37	1:0.3

Source: Ministry of Health (2014c).

<sup>1</sup> The term “skill mix” is usually used to describe the mix of posts, grades or occupations in an organization (strictly speaking, this is more accurately referred to as “grade mix”). It may also refer to the combinations of activities or skills needed for each job within the organization. Buchan J., Mario R. Dal Poz (2002).



## KEY MESSAGES

1. The health workforce is predominantly female. Policy implications for the future includes potential options for part-time work and child care facilities.
2. The MOH workforce is predominantly young. Policy implications include future bottlenecks for promotion and specialist training.
3. The majority of healthcare personnel are in the public sector. Among Doctors, dental practitioners and pharmacists, the large proportion in the public sector is due to the large influx of new graduates who are doing housemanship or compulsory service in the public sector
4. The proportion in the private sector increases rapidly for dental practitioners in the 30-39 age group and for Doctors in the 40-49 age group, reflecting the respective career paths.
5. Despite an overall increase in the number per 10,000 population for every region, for almost all categories of HRH, the gap between the west coast region and the other regions persists. The exceptions are community Nurses and dental Nurses where Sarawak and Sabah are best endowed. For most categories, the gap is most pronounced for Sabah, while the gap between the east coast region and Sarawak has narrowed.
6. Family Medicine Specialists (FMS) are very small in number and the policy of moving patients out of hospitals towards care in the community is placing them under great pressure.
7. Despite increasing in number, the skill mix between key categories remains unchanged. There are policy implications for strengthening the team approach.



5

**HEALTH  
PROFESSIONS  
EDUCATION**

**HUMAN RESOURCES  
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## 5. Health Professions Education

### 5.1. Training institutions and training programmes for HRH

For the major categories of HRH, there has been no change in the number of training institutions and training programmes since

2012 (see Table 11 and 12), with the exception of Traditional and Complementary Medicine.

**Table 11:** Number of Training Institutions for HRH, 2014

	Public Colleges	Public Universities	Private Colleges	Private Universities/ College Universities	All
Medicine	-	11	-	22	33
Dentistry	-	6	-	6	12
Pharmacy	-	5	-	11	16
Nursing	6	16	60	8	90
Midwifery	23	2	2	-	27
Assistant Medical Officer	6	4	15	3	28
Pharmacy Assistant	2	-	22	-	24
Dental Therapist (Nurse)	1	-	-	-	1
Dental Technologist	1	-	2	-	3
Dental Surgery Assistant	1	-	2	-	3
T&CM	-	-	1	7	8

Source: Malaysian Qualifications Agency, Ministry of Higher Education. (Unpublished)  
Various Divisions of the Ministry of Health and respective Boards. (Unpublished)

**Table 12:** Basic Education Programmes for HRH, 2013

	Public				Private				Total
	Certificate	Diploma	Degree	Sub-total	Certificate	Diploma	Degree	Sub-total	
Medicine	-	-	14	14	-	-	30	30	<b>44</b>
Dentistry	-	-	6	6	-	-	6	6	<b>12</b>
Pharmacy	-	-	5	5	-	-	12	12	<b>17</b>
Pharmacy Assistant	-	2	-	2	-	36	-	36	<b>38</b>
Nursing	11	19	6	36	-	72	30	102	<b>138</b>
Midwifery	11	13	0	24	-	2	-	2	<b>26</b>
Assistant Medical officer	-	6	4	10	-	15	3	18	<b>28</b>
Dental Therapist (Nurse)	-	1	-	1	-	-	-	-	<b>1</b>
Dental Technologist	-	1	-	1	1	1	-	2	<b>3</b>
Dental Surgery Assistant	1	-	-	1	3	-	-	3	<b>4</b>
T&CM	-	-	-	-	-	4	7	11	<b>11</b>
Other Allied Health Sciences	See Table 59								

Source: Malaysian Qualifications Agency, Ministry of Higher Education. (Unpublished)  
Various Divisions of the Ministry of Health and respective Boards. (Unpublished)

## 5.2. Sources of Training of Doctors and dental practitioners entering the health workforce

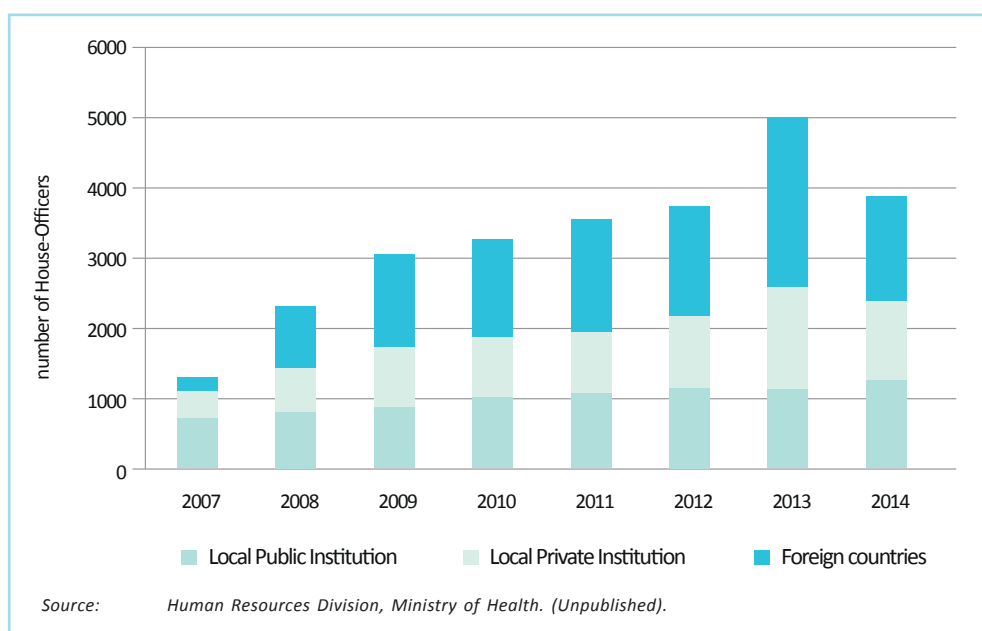
### 5.2.1. Doctors

The number of new medical graduates who enter the workforce annually has increased dramatically since 2008. This is partly due to the increase in the number of local medical schools as well as the availability of affordable accredited medical training programmes overseas. Though the number of locally trained medical graduates has increased, the proportion

trained in public and private universities has not changed much, but the proportion who were trained in foreign countries has increased (see Figure 25).

In 2014, about 40% of the graduates were trained overseas in 19 different countries with the largest contributors being Indonesia (528 graduates), Egypt (353 graduates), Russia (255 graduates), India (90 graduates) and Ireland (67 graduates). Throughout the five year period 2008–2013, Indonesia and Russia were the top sources of overseas-trained graduates, while Ukraine was third highest (see Table 13).

**Figure 25:** Sources of training of House-Officers entering the workforce, 2001-2014



**Table 13:** Foreign trained Medical Graduates, 2001-2014

Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1. India	108	66	30	45	29	17	8	12	12	13	72	64	45	90
2. Australia	26	12	9	15	4	2	10	14	30	36	53	59	99	39
3. Egypt	-	-	3	-	-	-	4	18	16	33	20	51	460	353
4. Bangladesh	-	-	-	2	1	2	1	-	-	-	1	1	-	2
5. Pakistan	7	3	7	4	5	4	4	2	3	-	1	3	3	1
6. Indonesia	7	3	7	4	5	19	61	164	265	242	368	571	785	528
7. Taiwan	5	3	2	-	5	1	-	5	-	1	10	6	6	3
8. China	-	-	-	-	-	-	-	4	7	18	28	14	20	12
9. New Zealand	18	13	7	7	8	1	11	1	8	15	23	9	23	18
10. Japan	7	1	-	1	4	2	1	-	1	2	1	2	-	-
11. Great Britain	4	9	5	11	6	-	4	48	83	104	47	59	101	47
12. Canada	10	14	2	6	5	5	1	2	6	5	11	2	1	-
13. Ireland	38	14	22	13	10	2	18	70	97	92	80	88	79	67
14. Russia	-	-	-	-	-	-	-	271	406	413	450	372	383	255
15. Ukraine	-	-	-	-	-	-	-	226	368	397	339	23	18	8
16. Jordan	-	-	-	-	-	-	-	-	-	-	-	29	47	41
17. Republic Czech	-	-	-	-	-	-	-	-	-	-	-	25	49	19
18. Romania	-	-	-	-	-	-	-	-	-	-	-	-	8	5
19. Poland	-	-	-	-	-	-	-	-	-	-	-	-	13	2
20. Others	11	29	15	21	22	11	71	40	30	17	96	185	263	-
<b>Total</b>	<b>241</b>	<b>167</b>	<b>109</b>	<b>129</b>	<b>104</b>	<b>66</b>	<b>194</b>	<b>877</b>	<b>1332</b>	<b>1388</b>	<b>1600</b>	<b>1563</b>	<b>2403</b>	<b>1490</b>

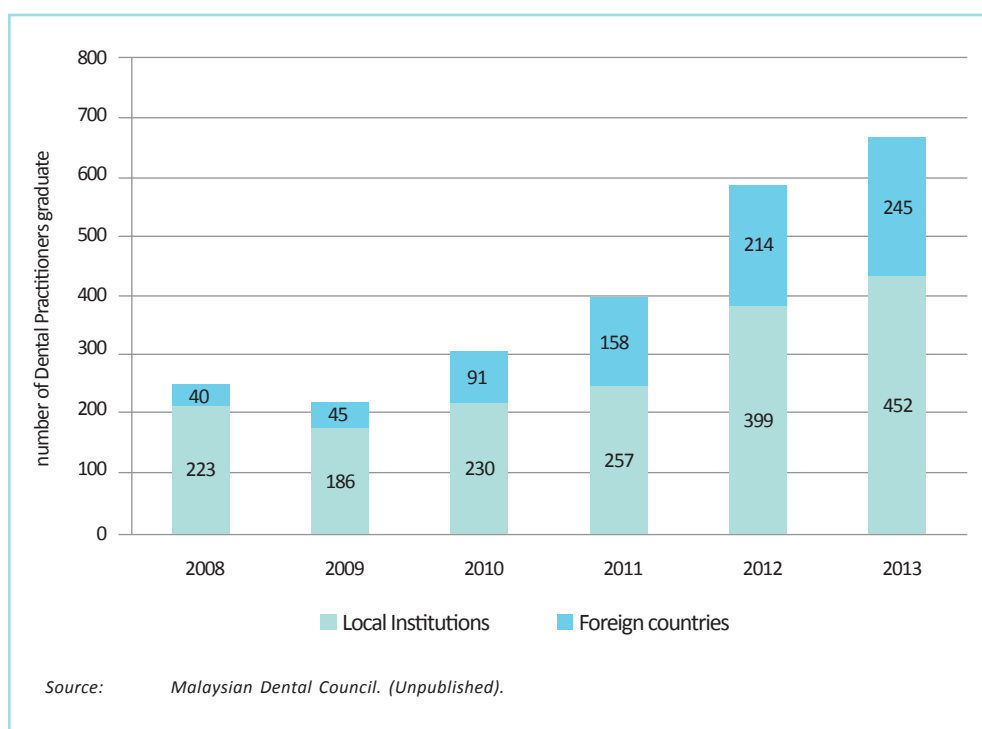
Source: Human Resources Division, Ministry of Health. (Unpublished).

### 5.2.2. Dental practitioners

In 2013, one third of the new entrants to the workforce were trained in foreign countries (Figure 26). Foreign-trained graduates received training in eleven

different countries, with the Indonesia (72 graduates) and India (69 graduates) being the major sources, followed by Jordan (39 graduates) and the United Kingdom (12 graduates).

**Figure 26:** Source of training of Dental Practitioners entering the workforce, 2008 – 2013



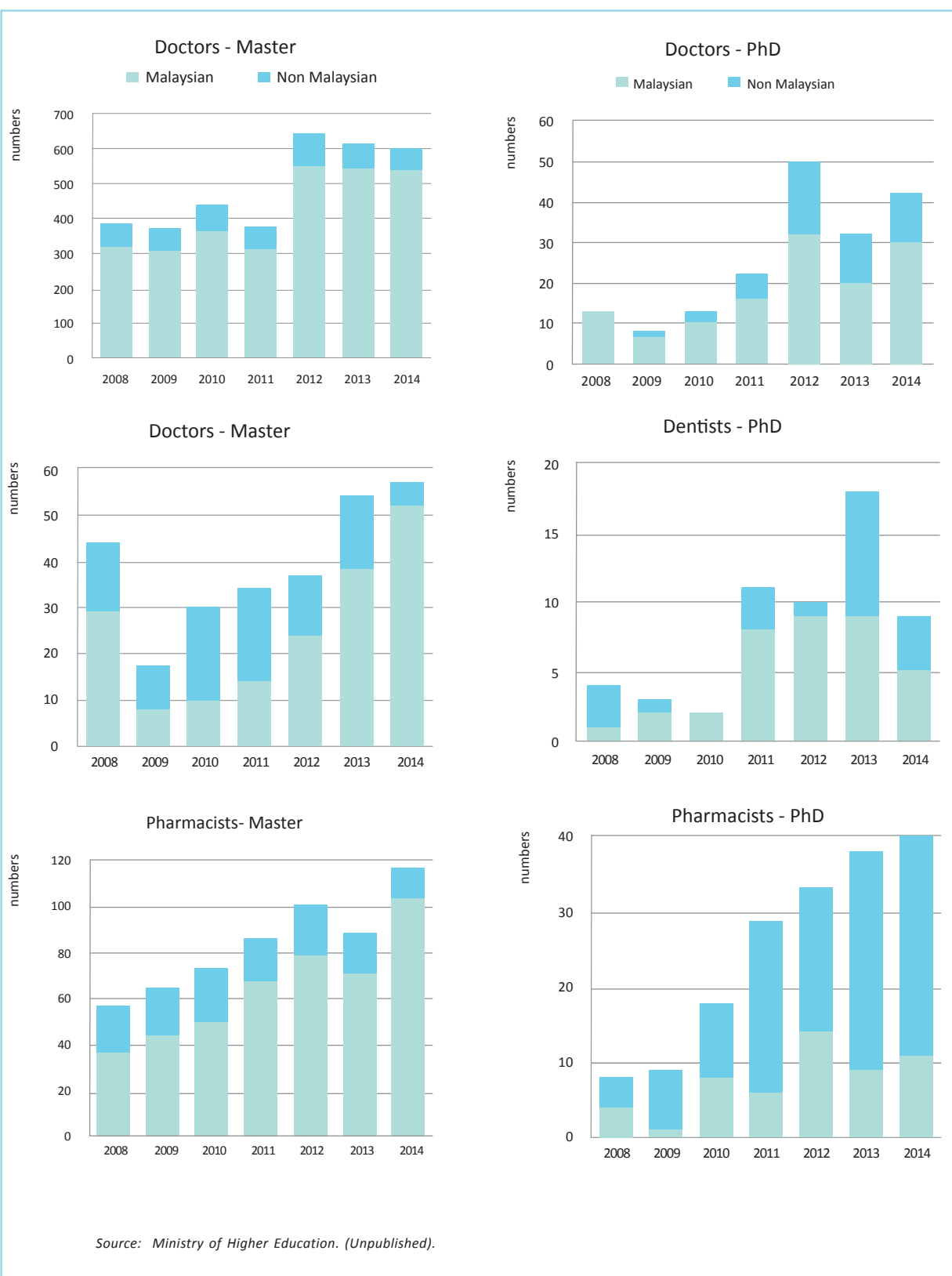
### 5.3. Post-graduate training in public sector Universities in Malaysia: Doctors, dental practitioners and pharmacists

For Doctors and Dental practitioners, post-graduate training of at least four years duration (equivalent to a Master's Programme) is a pre-requisite to becoming a specialist. Such training is available in Malaysian universities. In addition, several

programmes such as those established by the Royal Colleges in the United Kingdom are recognised.

For the purpose of this report, data on the production of post-graduates is available only from Malaysian universities in the public sector. Figure 27 illustrate the numbers of Doctors, Dental Practitioners and Pharmacists who completed post-graduate training during 2008 – 2014. Table 60 gives information on the numbers who are “in the pipeline”, i.e. the current enrolment for basic and post-graduate training for the major HRH categories.

**Figure 27:** Doctors, Dentist and Pharmacist completed postgraduate training in Malaysian Public-Sector Universities, 2008-2014



#### 5.4. Post-graduate training of Doctors employed by MOH.

For Doctors, postgraduate training is available in five Malaysian universities; University of Malaya (UM), National University of Malaysia (UKM) University of Science Malaysia (USM), International Islamic University of Malaysia (IIUM), University of Sarawak (UNIMAS), and University of Technology MARA (UiTM). Some of the universities that have their own teaching hospitals conduct their own clinical training, whereas the others rely on clinical training in the 29 MOH hospitals that have been accredited for this purpose. In 2014, 76% of the postgraduate students doing clinical training were being trained in MOH hospitals.

In order to increase the number of available specialists rapidly, a recent development has been the establishment of a “parallel pathway” for training. For this purpose, several post-graduate degrees from programmes such as those established by the Royal Colleges in the United Kingdom are recognised. Doctors who have full registration with MMC and have passed the Part 1 examination of the relevant College are eligible to register for the ‘parallel pathway’ programme. Subsequently the MOH facilitates their postings to enable them to achieve the clinical experiences required for their qualification. Table 14 gives the output of the medical Doctors from MOH who gained postgraduate qualifications through the Masters programme and the ‘parallel pathway’.

**Table 14:** Number of Clinical Specialist from MOH that gained postgraduate qualifications in five major disciplines through the Masters Programme and the ‘Parallel Pathway’, 2009-2013

Speciality	Qualification	2009	2010	2011	2012	2013
Internal Medicine	MRCP	30	55	67	76	44
	MMED	34	27	31	25	24
Paediatric	MRCPC	10	13	25	27	23
	MMED	12	14	15	21	26
O&G	MRCOG	3	3	5	5	5
	MMED	15	26	23	19	37
Oncology	FRCR	1	-	1	1	2
	MMED	1	4	3	4	1
Surgery	FRCS	-	-	-	-	-
	MMED	23	17	21	39	33
Anaesthesia	FANZCA	-	-	-	-	-
	MMED	37	47	40	43	46
<b>Total</b>		<b>166</b>	<b>206</b>	<b>231</b>	<b>260</b>	<b>243</b>

Source: Medical Development Division, Ministry of Health. (Unpublished).





## KEY MESSAGES

1. There has been no change during the past two years in the number of Malaysian institutions and programmes producing HRH except for T&CM which has increased.
2. The number of new medical graduates entering the workforce annually has increased to almost 4000, with the proportion from overseas universities increasing sharply after 2007.
3. In 2014, the proportion of new medical graduates from Malaysian public and private institutions was about 30% each while those from overseas institutions was almost 40%. For dental graduates about 33% are from overseas universities.



# 6

## **SUMMARY OF GREY LITERATURE SYSTEM ON HRH MANAGEMENT IN THE MOH**

**HUMAN RESOURCES  
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## 6. SUMMARY OF GREY LITERATURE ON HRH MANAGEMENT IN THE MOH

### 6.1. Introduction

This Report summarises some of the major studies on Human Resources that remain a part of the “grey literature” but provide useful insights into various issues related to HRH in Malaysia. During the decade 2005-2015, several studies on HRH management in the MOH have been undertaken. Most of the studies have been presented as internal reports or power point presentations to audiences within the MOH, and only a few smaller studies have been published. This chapter compiles and summarises key findings (and, in some cases, the recommendations) from the studies so as to provide an evidence base that could feed into a strategic planning process. Most of the studies present the perceptions of staff and management as obtained through interviews, focus group discussions and questionnaires.

### 6.2. Recruitment and deployment of HRH in MOH facilities

The MOH is the largest employer of HRH. Professional and allied health staff are recruited through the Public Service Commission, and they are governed by terms of service stipulated by the Public Service Department. For staff who are placed in the MOH, deployment, transfers and promotions are managed by the MOH. The respective Programme Divisions in the Ministry of Health deploy staff either to the MOH Headquarters or to the State Health Departments. The State departments in turn deploy staff either to divisions

within the State Health Department or to hospitals or district health departments, which in turn deploy them to the respective units in hospitals or to health centres.

#### 6.2.1 Deployment

A study in 2006 was done covering all managerial staff at the MOH Headquarter, State, hospitals, districts and training institutions in the MOH (Institute for Health Management 2006). Over 60% felt there was a mismatch between staff’ expertise and the services that were required and which they were expected to provide. This applied to staff at headquarters, hospitals, districts and institutions. During promotions or transfers, staff often were posted in places where their expertise or training were not required. Managers were hampered by the lack of an “accessible user-friendly electronic data base” that linked Annual Performance Appraisal information and permitted analysis of demographic characteristics and projection, staff deployment, turnovers, vacancies and unemployment rates.

About half of the managerial staff perceived the increasing numbers reaching retirement age as a concern in terms of loss of skilled clinical governance, and made suggestions to reemploy retired staff on flexible terms based on skill requirements.

#### 6.2.2 Retention: push-pull factors

Retention of HRH in the public sector has two major issues of concern, namely

- (a) loss of skilled experienced personnel from the public sector to the private sector, and
- (b) retention of health personnel in underserved areas, particularly Sabah and Sarawak.

In this context two large scale studies and a few smaller studies explored various push-pull factors as summarised below.

### **6.2.3 Retention of staff in Sabah and Sarawak**

A 2013 study of Doctors and medical specialists serving in Sabah and Sarawak showed there was a 40% retention rate over a 4 year period (Mastura et al. 2014). A 2014 study by IHM among 1125 medical, dental and pharmaceutical officers serving in East Malaysia showed that 8 out of 10 intended to continue serving in East Malaysia, with almost 79% intending to stay for more than five years (Institute for Health Management 2014). Predictors of intention to stay on in East Malaysia were, the staff member or spouse originating in East Malaysia, and if they perceived they had good opportunities for training and promotion. For West Malaysians posted in East Malaysia, separation from family, cost and difficulty of travelling home were prominent deterrents.

### **6.3. Workload**

Two large studies have reported perceptions on workload. Managerial staff felt that clinical staff were overburdened with clerical work, for example, revenue collection, registering and discharging patients from wards and this involved repetitive entries of patients' details (Institute for Health Management 2006). Another study in

2007 covering 130,000 non-managerial staff in MOH found that 54% of staff in the 'professional and managerial' category, especially Doctors and tutors, perceived their workload as heavy, with the highest being specialists (73%) followed by science officers (61%) and assistant medical officers (58%). Fourteen percent (14%) felt they had "too much administrative work". Those who had been in service longer were more likely to report having heavy workload. There was a strong correlation between perception of heavy workload and stress (Institute for Health Management 2009).

### **6.4. Career development and performance appraisal**

Findings from the above two large scale surveys of the perceptions of HRH has also reported that the key issues were:

- Promotion exercises taking too long (70% of HRH who responded).
- Inadequate career development opportunities especially for sub-specialities in all categories and for allied health professionals (17% of HRH who responded).
- Insufficient allocation of funds for training, and obstacles in the flow of funds for training due to the lack of a budget line item for training.
- Tutors stood out as a particular group that had problems in career advancement, recognition of training and job satisfaction.

Overall, 73% of staff in the professional and managerial category felt the performance appraisal system was fair, although the proportion was lower among specialists (58%) and tutors (60%) (Institute for Health Management 2006 and 2009).

## 6.5. Job satisfaction and intention to resign before retirement age

The survey of 130,000 MOH staff nationwide in 2007 found that nine out of ten staff “were satisfied” with the job (Institute for Health Management 2009). Using data from that survey, Roslan et al. explored job satisfaction and the intention to resign. Several dimensions of satisfaction were scored on a 5 point Likert scale, namely, opportunity for training, effectiveness of training, right job in the right place, cooperation from colleagues, workload and recognition, performance appraisal, remuneration, career development, promotion and service. Overall job satisfaction was 3.45 (on the scale of 1 to 5) and there was no significant difference between the various categories of HRH. Opportunity for training had the lowest score of 2.98 and but effectiveness of training had the highest score of 4. It was perceived that inadequate funds were allocated for training (Roslan et al. 2014).

Sizeable proportions (36% - 40%) of medical officers, dental practitioners, pharmacists, tutors and specialists intended to resign before reaching pensionable age (Institute for Health Management 2009). Among reasons given for intention to retire early were poor interpersonal relationships at work, economic reasons, and “personal factors”. High proportions had received job offers from the private sector, particularly among specialists (70%), pharmacists and tutors (50%) and dentist and medical officers (about 45%). And 40% of those who had received offers intended to resign.

During the period 2011 – 2012 a review of wage scales in public sector resulted in significant improvement to the remuneration, with time-based movement

up the wage scale and introduction of generous allowances particularly for health professionals such as specialists and others who were eligible for post-basic allowances (World Health Organisation 2014). It should be noted that the studies quoted earlier preceded this exercise.

A subsequent paper reported that 30% of medical specialists intended to resign from the public sector within three years (Mohd Idris O. et al. 2014). Dissatisfaction was highest with regard to opportunities for promotion, support for additional training and education, salary, facilities at the workplace, and benefits and allowances.

## 6.6. Entry competency of medical students

In October 2013, the MOH requested a study to address concerns about the quality of students entering medical schools (Chin YCM et al. 2014). The study was confined to medical schools in Malaysia where 11 of the schools were in the public sector and 22 were private. About 5.8% of entrants did not meet the minimum entry qualification established by the Malaysian Qualifications Agency (MQA). The biggest offenders were private medical schools that had not been accredited as yet, and 11% of their intake did not meet the minimum criteria. Even among the 9 accredited private medical schools, 4% of entrants did not meet minimum criteria, while public sector schools established before year 2000 were the most compliant. Only 2% of entrants had Malaysian High School Certificate (STPM) qualifications, and 57% came through the Foundation Science programme. An earlier study had shown that students who did not meet the minimum entry criteria were 2.6 times more likely to require an extension of their housemanship period (Norliza MN. et al. 2012).

## 6.7 Market analysis

A study of manpower requirement in the healthcare sub-sectors in Malaysia was commissioned by the Institute of Labour Market Information and Analysis (ILMIA), Ministry of Human Resources in the context of Malaysia's aim to have the health sector contribute to economic growth " ... by welcoming one million health travellers and conducting 1000 clinical trials. These efforts will result in approximately 181,000 new jobs". The study was conducted "to determine the manpower requirements for Malaysia's healthcare industry within the next decade which ends in 2020". The scope of the study covered, (i) pharmaceutical manufacturing, (ii) healthcare tourism, (iii) clinical research, and (iv) senior living. The study reviewed the current issues and challenges in each area; compared policies and regulations, training education, talent statistic and human capital strategies with selected developing and developed countries; determined the critical jobs and skills; studied supply and demand and analysed gaps as a basis for proposing strategies. For each area, critical skill gaps were highlighted. For example, in relation to Health Tourism, gaps were identified in private hospital management, hotel chains, IT systems and software management, immigration, operation theatres, wellness and complimentary services, and logistics (Institute of Labour Market Information and Analysis 2012).



## 7. CONCLUDING REMARKS

This report is intended to provide support for strengthening the strategic planning process for HRH. In this context the report provides information on the national stock and past trends of the four most numerous and costly categories of HRH (Doctors, dental practitioners, pharmacists and Nurses). It also provides useful information on regional distribution and the age and gender profiles of the health workforce employed by MOH who is the largest single employer of HRH. The report illustrates some of the major HRH challenges (too rapid increase in new entrants into the workforce, need to cater for increasing feminisation, demand for increased specialist training opportunities). It also illustrates the relative success of the distributional policies adopted by the public sector. There is a narrowing

of the gap between the regions. In the more disadvantaged regions, the lower proportion of professional categories have been compensated with higher proportion of their related allied health professional groups.

The major limitation of this report in terms of providing input for strategic planning is incomplete nationwide data on (a) future production i.e. inflow into the HRH stock, (b) attrition from the public and private sector HRH workforces, and (c) regional, age and gender distribution that includes all public and private sector agencies. Additionally, paucity of data on allied health professionals limits the ability to identify issues related to skill mix among HRH.

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## ANNEX 1. DATA TABLES

### HRH TRENDS

**D**ata on the stock of Human Resources for Health (HRH) in both the public and private sectors is available only for those categories of that legally are required to be registered. Community Nurses are employed almost exclusively only in the public sector.

**Table 15:** Number of Doctors, Dental Practitioners, Pharmacists And Nurses (per 10,000 Population), 2002 - 2014

Personnel	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Doctors	7.11	7.27	7.14	7.72	8.26	8.77	9.11	10.87	11.54	12.64	13.20	15.79	15.13*
Dental practitioners	0.94	0.97	1.00	1.06	1.11	1.17	1.32	1.27	1.33	1.47	1.55	1.76	1.96
Pharmacist	1.15	1.24	1.37	1.54	1.62	1.69	2.32	2.47	2.71	2.98	3.29	3.39	4.08
Nurses	14.38	14.68	15.72	16.89	17.88	18.00	19.55	20.97	24.39	25.82	28.96	30.00	30.79

Source: Ministry of Health 2014c. (Various years)

\* Data on number of Doctors working in Non MOH institutions is not available

**Table 16:** Number of Assistant Medical Officer, Opticians and Optometrists, Community Nurse and Midwives (per 10,000 population), 2002-2014

Personnel	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
AMO	2.26	2.29	2.22	2.50	2.91	2.94	3.19	3.27	3.49	3.74	3.89	4.06	4.09
Opticians	0.00	0.00	0.00	0.00	0.00	0.00	0.91	0.97	0.99	0.87	1.00	1.03	1.04
Optometrists	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.28	0.31	0.31	0.39	0.45	0.47
Community Nurse	3.25	4.21	4.81	5.63	5.95	6.19	6.57	7.01	7.36	7.53	7.84	8.15	8.40
Midwives	0.50	0.43	0.40	0.37	0.33	0.05	0.19	0.17	0.14	0.16	0.07	0.07	0.04

Source: Ministry of Health 2014c. (Various years)

The categories in Table 17 reflects only Allied Health personnel employed by the MOH, which is the largest single employer of HRH. These categories are reported by Health Informatics Centre, MOH, but are not required to register

by law. The exception is Traditional and Complementary practitioners, who are all in the private sector, are required to register with the T&CM Council only after the enforcement of T&CM Act in the near future. The data in this table is based on those who have registered voluntarily.

**Table 17:** Number of Allied Health Personnel (per 10,000 Population) from 2002-2014

Personnel	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Physiotherapist (PT)	0.12	0.15	0.15	0.18	0.18	0.21	0.22	0.24	0.28	0.28	0.35	0.4	0.45
Radiographers	0.31	0.35	0.39	0.44	0.47	0.51	0.55	0.58	0.71	0.75	1.48	0.91	0.91
Occupational Therapist (OT)	0.08	0.09	0.1	0.12	0.11	0.15	0.15	0.17	0.23	0.23	0.28	0.29	0.34
Dental Nurse	0.74	0.75	0.78	0.8	0.8	0.86	0.83	0.87	0.87	0.87	0.94	0.94	0.93
Dental technicians	0.24	0.25	0.26	0.25	0.24	-	-	-	-	-	-	-	-
Dental Technologies	-	-	-	-	-	0.25	0.28	0.26	0.26	0.54	0.58	0.59	0.61
Dental Surgery Assistant	-	-	-	-	-	-	0.11	-	-	0.02	0.14	0.13	0.13
Medical laboratory Technician (MLT)	1.12	1.15	1.22	1.27	1.29	1.36	1.47	1.58	1.74	1.83	2.1	2.06	2.13
Environmental Health Officer (EHO)	0.68	0.79	0.78	0.81	0.86	0.9	0.93	0.97	1.12	1.17	1.69	1.44	-
Traditional and Complementary Medicine (T&CM)	-	-	-	-	-	-	3.17	4.16	4.28	4.56	4.56	4.22	-
<i>Source: Allied Health Division, Ministry of Health. (Unpublished).</i>													
<i>Note: Traditional and Complementary Medicine (T&amp;CM) practitioners are in the private sector</i>													

## DISTRIBUTION BY SECTOR

**Table 18:** Distribution of Doctors by sector, 2000-2014

YEAR	Numbers (%)		
	Public sector	Private sector	Total
2000	8,410 (53.8%)	7,209 (46.2%)	15,619
2001	8,615 (53.4%)	7,531 (46.6%)	16,146
2002	9,424 (54.0%)	8,018 (46.0%)	17,442
2003	8,946 (49.2%)	9,245 (50.8%)	18,191
2004	9,410 (51.6%)	8,836 (48.4%)	18,246
2005	10,943 (54.4%)	9,162 (45.6%)	20,105
2006	13,335 (60.8%)	8,602 (39.2%)	21,937
2007	14,298 (60.2%)	9,440 (39.8%)	23,738
2008	15,096 (60.1%)	10,006 (39.9%)	25,102
2009	20,192 (66.1%)	10,344 (33.9%)	30,536
2010	22,429 (68.0%)	10,550 (32.0%)	32,979
2011	25,845 (70.6%)	10,762 (29.4%)	36,607
2012	27,478 (71.0%)	11,240 (29.0%)	38,718
2013	35,219 (75.1%)	11,697 (24.9%)	46,916
2014	33,275 (73.0%)	12,290 (27.0%)	45,565

Source: Ministry of Health 2014c. (Various years)

**Table 19:** Distribution of Dental Practitioners by sector, 2000-2014

YEAR	Numbers (%)		
	Public sector	Private sector	Total
2000	750 (35.0%)	1,394 (65.0%)	2,144
2001	782 (35.1%)	1,443 (64.9%)	2,225
2002	879 (38.3%)	1,418 (61.7%)	2,297
2003	992 (41.0%)	1,426 (59.0%)	2,418
2004	1,111 (43.6%)	1,439 (56.4%)	2,550
2005	1,263 (45.9%)	1,488 (54.1%)	2,751
2006	1,368 (46.5%)	1,572 (53.5%)	2,940
2007	1,540 (48.7%)	1,625 (51.3%)	3,165
2008	1,922 (52.8%)	1,718 (47.2%)	3,640
2009	1,858 (52.1%)	1,709 (47.9%)	3,567
2010	2,055 (53.9%)	1,755 (46.1%)	3,810
2011	2,452 (57.7%)	1,801 (42.3%)	4,253
2012	2,664 (58.4%)	1,894 (41.6%)	4,558
2013	2,777 (58.4%)	1,979 (41.6%)	4,756
2014	3,763 (63.9%)	2,125 (36.1%)	5,888

Source: Ministry of Health 2014c. (Various years)

**Table 20:** Distribution of Pharmacists by sector, 2000 – 2014

	Numbers (%)		
	Public sector	Private sector	Total
2000	434 (18.6%)	1,899 (81.4%)	2,333
2001	460 (17.9%)	2,107 (82.1%)	2,567
2002	517 (18.3%)	2,311 (81.7%)	2,828
2003	798 (25.7%)	2,306 (74.3%)	3,104
2004	804 (22.9%)	2,702 (77.1%)	3,506
2005	955 (23.8%)	3,057 (76.2%)	4,012
2006	889 (20.7%)	3,403 (79.3%)	4,292
2007	1,250 (27.3%)	3,321 (72.7%)	4,571
2008	3,070 (48.0%)	3,327 (52.0%)	6,397
2009	3,877 (57.1%)	2,907 (42.9%)	6,784
2010	4,610 (59.4%)	3,149 (40.6%)	7,759
2011	5,288 (61.3%)	3,344 (38.7%)	8,632
2012	5,908 (61.2%)	3,744 (38.8%)	9,652
2013	6,501 (66.2%)	3,325 (33.8%)	9,826
2014	7,117 (57.9%)	5,177 (42.1%)	12,294

Source: Ministry of Health 2014c. (Various years)

**Table 21:** Distribution of Nurses by sector, 2000-2014

	Numbers (%)		
	Public sector	Private sector	Total
2000	23,255 (74.7%)	7,874 (25.3%)	31,129
2001	24,543 (73.7%)	8,752 (26.3%)	33,295
2002	26,029 (73.8%)	9,251 (26.2%)	35,280
2003	27,089 (73.6%)	9,695 (26.4%)	36,784
2004	30,002 (74.6%)	10,218 (25.4%)	40,220
2005	32,580 (73.8%)	11,540 (26.2%)	44,120
2006	34,598 (72.6%)	13,044 (27.4%)	47,642
2007	36,150 (73.9%)	12,766 (26.1%)	48,916
2008	38,575 (71.2%)	15,633 (28.8%)	54,208
2009	45,060 (75.9%)	14,315 (24.1%)	59,375
2010	47,992 (69.4%)	21,118 (30.6%)	69,110
2011	50,063 (66.9%)	24,725 (33.1%)	74,788
2012	56,089 (66.0%)	28,879 (34.0%)	84,968
2013	56,503 (67.9%)	26,653 (32.1%)	83,156
2014	64,348 (69.4%)	28,333 (30.6%)	92,681

Source: Ministry of Health 2014c. (Various years)

**Table 22:** Distribution of Assistant Medical Officer by sectors, 2002-2014

	Numbers (%)		
	Public sector	Private sector	Total
2002	5,341 (90.8%)	538 (9.2%)	5,879
2003	5,504 (90.8%)	556 (9.2%)	6,060
2004	5,510 (91.0%)	547 (9.0%)	6,057
2005	6,113 (91.1%)	596 (8.9%)	6,709
2006	7,150 (92.6%)	570 (7.4%)	7,720
2007	7,411 (93.2%)	537 (6.8%)	7,948
2008	8,310 (91.5%)	768 (8.5%)	9,078
2009	8,648 (91.9%)	766 (8.1%)	9,414
2010	9,556 (92.3%)	794 (7.7%)	10,350
2011	10,289 (92.2%)	873 (7.8%)	11,162
2012	10,902 (92.0%)	944 (8.0%)	11,846
2013	11,089 (88.6%)	1,428 (11.4%)	12,517
2014	11,775 (92.2%)	998 (7.8%)	12,773
Source: Ministry of Health 2014c. (Various years)			

**Table 23:** Number of Clinical Specialists in the hospitals by sectors, 2009 – 2011 and 2013

	Numbers (%)		
	Public sector	Private sector	Total
2009	3,649 (62.0%)	2,195 (37.3%)	5,884
2010	3,768 (56.3%)	2,928 (43.7%)	6,696
2011	3,914 (55.9%)	3,082 (44.1%)	6,996
2013	4,427 (56.5%)	3,412 (43.5%)	7,839
Source: Clinical Research Centre 2011a, 2012 and 2015a.			

**Table 24:** Number of Dental Nurses in public sector, 2002-2014

	Numbers (%)		Total
	MOH	Non MOH	
2002	1,805	NA	1,805
2003	1,888	NA	1,888
2004	1,993	NA	1,993
2005	2,071	NA	2,071
2006	2,129	NA	2,129
2007	2,319	NA	2,319
2008	2,254	33	2,287
2009	2,447	NA	2,447
2010	2,486	NA	2,486
2011	2,528	NA	2,528
2012	2,600	84	2,684
2013	2,706	87	2,793
2014	2,720	72	2,792

Source: Ministry of Health 2014c. (Various years)  
Note. Dental Nurses work only in the public sector

**Table 25:** Distribution of Dental Technologists by sector, 2002-2014

	Numbers (%)		Total
	Public sector	Private sector	
2002	584	NA	584
2003	625	NA	625
2004	657	NA	657
2005	655	NA	655
2006	646	NA	646
2007	684	NA	684
2008	772	NA	772
2009	737	NA	737
2010	749	NA	749
2011	816 (52.3%)	743 (47.7%)	1,559
2012	963 (56.3%)	749 (43.8%)	1,712
2013	1000 (56.7%)	765 (43.3%)	1,765
2014	1053 (57.8%)	770 (42.2%)	1,823

Source: Ministry of Health 2014c. (Various years)



**Table 26:** Distribution of Dental Surgery Assistants by sector, 2002-2014

	Numbers (%)		
	Public sector	Private sector	Total
2002	1738	-	1,738
2003	1891	-	1,891
2004	2111	-	2,111
2005	2355	-	2,355
2006	2471	-	2,471
2007	2632	-	2,632
2008	3278	-	3,278
2009	2820	-	2,820
2010	2950	-	2,950
2011	3334	-	3,334
2012	4212 (99.0%)	44 (1.0%)	4,256
2013	4264 (99.1%)	39 (0.9%)	4,303
2014	4331 (99.3%)	30 (0.7%)	4,361

Source: Ministry of Health 2014c. (Various years)

**Table 27:** Distribution of Assistant Pharmacists by sector, 2007 – 2014

	Numbers (%)		
	Public sector	Private sector	Total
2007	2652	-	2,652
2008	2778	-	2,778
2009	2949	-	2,949
2010	3318	-	3,318
2011	3534	-	3,534
2012	4068 (89.4%)	482 (10.6%)	4,550
2013	4294 (88.6%)	552 (11.4%)	4,846
2014	4350 (86.3%)	688 (13.7%)	5,038

Source: Ministry of Health 2014c. (Various years)

**Table 28:** Distribution of Midwives and Community Nurses by sector, 2002-2014

	Numbers (%)		
	Public sector	Private sector	Total
2002	9043 (98.2%)	167 (1.8%)	9,210
2003	11293 (97.3%)	317 (2.7%)	11,610
2004	13128 (98.8%)	164 (1.2%)	13,292
2005	15408 (98.7%)	210 (1.3%)	15,618
2006	16090 (96.5%)	577 (3.5%)	16,667
2007	16550 (98.0%)	333 (2.0%)	16,883
2008	18143 (97.3%)	500 (2.7%)	18,643
2009	18851 (93.5%)	1312 (6.5%)	20,163
2010	21282 (99.2%)	167 (0.8%)	21,449
2011	21928 (98.5%)	338 (1.5%)	22,266
2012	22917 (98.7%)	301 (1.3%)	23,218
2013	24152 (98.9%)	267 (1.1%)	24,419
2014	25179 (99.1%)	241 (0.9%)	25,420

Source: Ministry of Health 2014c. (Various years)

**Table 29:** Traditional and Complementary Medicine (T&CM) Practitioners by field of practice, 2014

Field of Practice	Total
Traditional Malay Medicine	2028
Traditional Chinese Medicine	8235
Traditional Indian Medicine	53
Islamic Medical Practice	461
Homeopathy	322
Complementary Medicine	1978
<b>Total</b>	<b>13077</b>

Source: Traditional and Complementary Medicine Division, Ministry of Health. (Unpublished).

**Table 30:** Distribution of Doctors working in primary care facilities by sector, 2014

	Percent	SE	95% LCL	95% UCL
Public sector	27.3 %	1.7 %	24 %	30.6 %
Private sector	72.7 %	1.7 %	69.4 %	76 %

Sample size: 936. LCL = lower confidence level; UCL = upper confidence level  
Source: Clinical Research Centre. (Unpublished).

(Note: The data on Doctors in primary care was generated from a sample survey of randomly selected clinics - 139 from the public sector and 1002 from the private sector. The survey excluded outpatient departments situated in hospitals and clinics that did not have permanent medical Doctors or provided services for less than 5 days a week, or provided preventive personal healthcare services, or provided specialist services)

## AGE AND GENDER PROFILE

**Table 31:** Percentage of Doctors, Dental Practitioners, Pharmacists And Nurses by sex, 2013/2014

	Male	Female
All Doctors, 2013 <sup>a</sup>	38.8 %	61.2 %
Specialist Doctors, 2013 <sup>b</sup>	61.6 %	38.4 %
Primary care Doctors not in hospitals, 2014 <sup>c</sup>	51.9 %	48.1 %
Hospital-based Doctors, 2013 <sup>b, d</sup>	50 %	50 %
All dental practitioners, 2013 <sup>a</sup>	23 %	77 %
Pharmacists, 2013 <sup>a</sup>	22 %	78 %
Nurses 2013, <sup>a</sup>	3 %	97 %

Sources: *a: Ministry of Health 2014c.*  
*b: Clinical Research Centre 2015a.*  
*c: Clinical Research Centre 2015b.*

**Table 32:** Distribution of Dental Practitioners by age-group and sector, 2014

Age-group in years	Public sector			Private sector			Total
	Female	Male	Total	Female	Male	Total	
<30	1856	631	2487	123	85	208	2695 (45.7 %)
31-40	592	141	733	336	166	502	1235 (20.9 %)
41-50	225	79	304	281	270	551	855 (14.5 %)
51-60	145	61	206	206	224	430	636 (10.8 %)
>60	16	17	33	107	327	434	467 (7.9 %)
Total	2834	929	3763	1053	1072	2125	5888

Source: Malaysian Dental Council. (Unpublished).

### Doctors

Data on the sector-wide for age profile for all Doctors is not available. However, profiles for specific categories of Doctors have been generated using survey data for Doctors working in public and private sector, in

- Primary care clinics (excluding outpatient and accident and emergency facilities in hospitals),
- Hospitals as medical officers and specialists
- Hospitals as specialists.

### Pharmacists, Nurses and allied health professionals

Data on the age profile is not available sector-wide. Data for staff employed by the MOH is given in the next section

**Table 33:** Percentage of all Primary Care Doctors by age-group and sex, 2014

Age-group in years	Female					Male				
	Percent	SE	2 SE	95% LCL	95% UCL	Percent	SE	2SE	95% LCL	95% UCL
<30	11.6	11.6	22.8	-11.1	34.4	88.4	11.6	22.8	65.6	111.1
30-39	49.7	6.8	13.4	36.3	63.1	50.3	6.8	13.4	36.9	63.7
40-49	51.1	5.9	11.7	39.5	62.8	48.9	5.9	11.7	37.2	60.5
50-59	36.3	5.6	11.1	25.3	47.4	63.7	5.6	11.1	52.6	74.7
60 and above	17.5	5.6	10.9	6.6	28.4	82.5	5.6	10.9	71.6	93.4

Sample size: 936. LCL = lower confidence level; UCL = upper confidence level  
Source: Clinical Research Centre 2015b. (Unpublished).

**Table 34:** Percentage of Primary Care Doctors in public sector by age-group and sex, 2014

Age-group in years	Female					Male				
	Percent	SE	2 SE	95% LCL	95% UCL	Percent	SE	2SE	95% LCL	95% UCL
<30	66.0	4.0	7.9	58.1	73.9	34.0	4.0	7.9	26.1	41.9
30-39	74.1	3.6	7.1	67.0	81.2	25.9	3.6	7.1	18.8	33.0
40-49	81.3	8.8	17.2	64.0	98.5	18.7	8.8	17.2	1.5	36.0
50-59	28.6	11.8	23.2	5.5	51.8	71.4	11.8	23.2	48.2	94.5
60 and above	100.0	0.0	0.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0

Sample size: 936. LCL = lower confidence level; UCL = upper confidence level  
Source: Clinical Research Centre 2015b. (Unpublished).

**Table 35:** Percentage of Primary Care Doctors in private sector by age-group and sex, 2014

Age-group in years	Female					Male				
	Percent	SE	2 SE	95% LCL	95% UCL	Percent	SE	2SE	95% LCL	95% UCL
<30	11.6	11.6	22.8	-11.1	34.4	88.4	11.6	22.8	65.6	111.1
30-39	49.7	6.8	13.4	36.3	63.1	50.3	6.8	13.4	36.9	63.7
40-49	51.1	5.9	11.7	39.5	62.8	48.9	5.9	11.7	37.2	60.5
50-59	36.3	5.6	11.1	25.3	47.4	63.7	5.6	11.1	52.6	74.7
60 and above	17.5	5.6	10.9	6.6	28.4	82.5	5.6	10.9	71.6	93.4

Sample size: 936. LCL = lower confidence level; UCL = upper confidence level  
Source: Clinical Research Centre 2015b. (Unpublished).

**Table 36:** Distribution of hospital-based Doctors (including Clinical Specialists) by age-group and sector, 2013

Age-group in years	Public sector	Private sector	University	Total
<30	5,396	24	105	5,525
30-39	6,178	489	1,187	7,854
40-49	1,811	1,605	478	3,894
50-59	644	1,151	161	1,956
>=60	78	726	51	855

Source: Clinical Research Centre 2015a. (Unpublished).

**Table 37:** Distribution of hospital-based Clinical Specialists by sector, age-group and sex, 2013

Age	Gender	Number of specialists by Sector			Summary profile
		Public	Private	Total	
<30	Male	6	-	6	<b>Females:</b>
	Female	-	-	-	In workforce: 38%
	Total	6	-	6	In public sector: 52%
30-39	Male	832	189	1021	In private sector: 21%
	Female	1022	80	1102	
	Total	1854	269	2123	<b>Age below 40 years:</b>
40-49	Male	860	1086	1946	In workforce: 27%
	Female	983	341	1324	In public sector: 42%
	Total	1843	1427	3270	In private sector: 7%
50-59	Male	350	854	1204	
	Female	264	201	465	<b>Below age 50:</b>
	Total	614	1055	1669	In workforce: 68%
≥ 60	Male	74	566	640	In public sector: 83%
	Female	35	92	127	In private sector: 50%
	Total	109	658	767	
Missing Age	Male	1	3	4	
	Female	-	-	-	
	Total	1	3	4	
All ages (Total)	Male	2123	2698	4821	
	Female	2304	714	3018	
	Total	4427	3412	7839	

Source: Clinical Research Centre 2015a.

**Table 38:** Number of Public Health Medicine Specialist by age and sex, 2014

Age-group in years	Male	Female	Total	Summary profile
30-39	13	22	35	<b>MOH: 477</b>
40-49	82	168	250	Armed Forces: 14
50-59	159	154	313	Universities: 64
≥ 60	57	38	95	Private: 33
Total	311	382	693	Retiree: 105

Source: Office of the Deputy Director General for Public Health, Ministry of Health. (Unpublished)

## AGE AND GENDER PROFILE OF HRH EMPLOYED BY THE MOH

**Table 39:** Number of MOH employed hospital-based Doctors by sex, 2013

	Male	Female	Total
Medical officers	5,238	7,014	12,252
Clinical Specialists	4,821	3,018	7,839
Total	10,059 (50.1%)	10,032 (49.9%)	20,091 (100%)

Source: Clinical Research Centre 2015a.

**Table 40:** Number of MOH employed Doctors, Dental Practitioners and Pharmacists by age-group and sex, 2011 - 2014

MOH staff	Age-group	Gender	2011	2012	2013	2014	Summary 2014 profile
Doctors	<30	Male	1603	3034	4775	5900	Female: 61%; Below age 40: 87%
		Female	2333	4417	7282	9237	
	30-39	Male	2964	4022	3983	3712	
		Female	4786	6311	6451	6081	
	40-49	Male	886	1124	1055	978	
		Female	1267	1679	1650	1598	
	50-59	Male	402	452	446	438	
		Female	432	515	512	491	
	≥ 60	Male	26	22	25	9	
		Female	10	8	7	3	
Dental practitioners	<30	Male	72	185	384	498	Female: 77%; Below age 40: 88%
		Female	267	573	1128	1552	
	30-39	Male	113	137	92	127	
		Female	503	633	455	574	
	40-49	Male	22	43	44	46	
		Female	112	161	168	165	
	50-59	Male	33	47	47	47	
		Female	109	128	123	123	
	≥ 60	Male	7	8	8	1	
		Female	7	8	9	1	
Pharmacists	<30	Male	407	723	988	1137	Female: 78%; Below age 40: 96%
		Female	1131	2108	3021	3905	
	30-39	Male	213	349	331	232	
		Female	888	1523	1496	1137	
	40-49	Male	11	18	19	16	
		Female	102	118	121	104	
	50-59	Male	50	54	48	49	
		Female	72	87	84	78	
	≥ 60	Male	3	3	3	0	
		Female	5	5	4	1	

Source: Human Resources Division, Ministry of Health. (Unpublished).

**Table 41:** Number of MOH employed Assistant Medical Officers by age-group and sex, 2011 - 2013

Age	Gender	2011	2012	2013	2014	Summary 2014 profile
<30	Male	1436	1985	2817	3346	Profile  Female 6.3%; Below age 40: 39%
	Female	119	259	493	637	
30-39	Male	4080	4164	3345	4175	
	Female	33	36	37	29	
40-49	Male	1466	1547	1526	1538	
	Female	4	3	4	2	
50-59	Male	990	1025	967	914	
	Female	10	11	5	0	
≥ 60	Male	123	91	78	9	
	Female	-	-	-	-	
All		8261	9121	9272	10650	

Source: Human Resources Division, Ministry of Health. (Unpublished).

**Table 42:** Number of MOH employed Nurses by age-group and sex, 2011-2014

Age	Gender	2011	2012	2013	2014
<30	Male	314	443	830	1200
	Female	8440	10793	17170	21939
30-39	Male	283	296	305	313
	Female	17318	17991	18974	19592
40-49	Male	7	8	8	8
	Female	8978	9322	9377	9366
50-59	Male	43	48	46	40
	Female	6840	6586	5780	5087
≥ 60	Male	6	4	5	0
	Female	514	304	240	20

Source: Human Resources Division, Ministry of Health. (Unpublished).



**Table 43:** Number of MOH employed Clinical Allied Health personnel by age-group and sex, 2011-2014

Personnel	Age	Gender	2011	2012	2013	2014	2014 profile
Audiologist	<30	Male	5	7	8	13	Female: 87%. Below age 40: 100%
		Female	53	65	79	91	
	30-39	Male	5	7	7	8	
		Female	27	31	38	49	
Clinical psychologist	< 30	Female	2	3	5	8	Female: 100% Below age 40: 100%
	30-39	Female	1	2	2	6	
Clinical Scientist (Biochemist)	<30	Male	17	18	19	22	Female 79%. Below age 40: 81%
		Female	88	97	108	113	
	30-39	Male	36	40	39	41	
		Female	165	170	168	177	
	40-49	Male	18	14	14	16	
		Female	39	37	39	42	
	50-59	Male	13	18	14	14	
		Female	7	7	9	9	
	≥ 60	Male	-	-	-	1	
		Female	-	-	-	-	
Clinical Scientist (Biomedical Scientist)	<30	Male	7	7	10	12	Female 75%; Below age 40 97%
		Female	39	40	49	55	
	30-39	Male	-	-	-	1	
		Female	2	2	4	6	
	40-59	Male	-	-	1	1	
		Female	-	-	1	1	
Clinical Scientist (Embryologist)	<30	Male	-	-	-	2	Female 50% Below age 40: 66%
		Female	1	2	3	4	
	40-49	Male	1	2	1	1	
	50-59	Male	-	-	1	1	
		Female	-	-	-	-	
Clinical Scientist (Medical Geneticist)	<30	Male	-	4	3	2	Female 89% Below age 40: 94%
		Female	-	-	-	10	
	30-39	Female	-	-	-	6	
	40-49	Female	-	-	-	1	
		Female	-	-	-	-	

Personnel	Age	Gender	2011	2012	2013	2014	2014 profile
Clinical Scientist (Microbiologist)	<30	Male	-	-	-	34	Female 83%; Below age 40: 75%
		Female	-	-	-	75	
	30-39	Male	-	-	-	38	
		Female	-	-	-	120	
	40-49	Male	-	-	-	15	
		Female	-	-	-	27	
	50-59	Male	-	-	-	12	
		Female	-	-	-	4	
Dietician	<30	Male	-	-	-	23	Female 88%; Below age 40: 91%
		Female	-	-	-	150	
	30-39	Male	-	-	-	16	
		Female	-	-	-	157	
	40-49	Male	-	-	-	5	
		Female	-	-	-	25	
	50-59	Male	-	-	-	nil	
		Female	-	-	-	3	
Food Service Officer (Healthcare)	<30	Male	11	14	25	21	Female 77%; Below age 40: 80%
		Female	47	45	106	86	
	30-39	Male	30	24	35	38	
		Female	60	68	91	110	
	40-49	Male	6	11	10	10	
		Female	23	29	23	16	
	50-59	Male	8	3	5	5	
		Female	34	26	30	32	
Medical Laboratory Technologist	<30	Male	2079	2149	2307	2307	Female 51%; Below age 40: 94%
		Female	2644	2734	2936	2936	
	30-39	Male	512	529	581	619	
		Female	219	226	248	265	
	40-49	Male	148	146	178	216	
		Female	84	95	102	114	
	50-59	Male	20	21	19	37	
		Female	-	-	3	5	
Speech -Language Therapist	<30	Male	3	2	2	3	Female 93%; Below age 40: 99%
		Female	24	28	29	48	
	30-39	Male	-	3	2	2	
		Female	31	32	37	37	
	40-49	Male	1	1	1	0	
		Female	-	-	1	1	
	50-59	Male	-	-	-	1	
		Female	-	-	-	-	

Source: Allied Health Sciences Division, Ministry of Health. (Unpublished).

**Table 44:** Number of MOH employed Non-Clinical Allied Health personnel by age-group and sex, 2011-2014

Personnel	Age	Gender	2011	2012	2013	2014	Summary 2014 profile
Entomologist <sup>1</sup>	<30	Male	7	5	11	18	
		Female	17	15	20	30	
	30-39	Male	12	15	14	15	
		Female	28	34	32	28	
	40-49	Male	7	6	8	9	
		Female	2	4	10	10	
	50-59	Male	4	4	4	4	
		Female	-	-	-	-	
Assistant Food Technologist	<30	Male	7	5	6	7	Female: 80%. Below age 40: 85%
		Female	61	57	52	50	
	30-39	Male	23	25	25	24	
		Female	67	74	83	88	
	40-49	Male	5	5	5	5	
		Female	13	13	15	19	
	50-59	Male	1	2	2	2	
		Female	3	3	3	3	
Forensic Science Officer	<30	Male	-	-	4	5	Female: 58%. Below age 40: 100%
		Female	-	2	2	5	
	30-39	Male	13	13	13	13	
		Female	19	19	20	20	

Source: Allied Health Sciences Division, Ministry of Health. (Unpublished). <sup>1</sup> Office of the Deputy Director General for Public Health, Ministry of Health. (Unpublished)

**Table 45:** Number of MOH employed Allied Health personnel according to placement setting by age-group and sex, 2011-2014

	Age	Gender	2011		2012		2013		2014	
			Clinical	Non Clinical	Clinical	Non Clinical	Clinical	Non Clinical	Clinical	Non Clinical
Assistant Pharmacist	<30	Male	-	-	350	7	468	19	442	7
		Female	-	-	980	43	1117	51	1104	25
	30-39	Male	-	-	212	12	184	18	187	15
		Female	-	-	750	22	767	32	873	55
	40-49	Male	-	-	269	6	229	13	194	10
		Female	-	-	427	12	442	14	485	12
	50-59	Male	-	-	264	12	243	12	227	6
		Female	-	-	375	17	323	17	332	19
	≥ 60	Male	-	-	13	-	1	1	24	-
		Female	-	-	6	-	-	-	23	-
Medical Physicist	<30	Male	6	5	6	6	14	8	28	9
		Female	15	4	24	10	35	12	51	34
	30-39	Male	14	15	14	15	14	15	14	15
		Female	27	12	28	12	28	12	28	12
	40-49	Male	4	7	4	7	4	7	4	7
		Female	2	1	2	1	2	1	2	1
	50-59	Male	1	4	1	4	1	4	1	4
		Female	-	1	-	1	-	1	-	1
	≥ 60	Male	-	-	-	-	-	-	2	1
		Female	-	-	-	-	-	-	11	2
Medical Record Officer	<30	Male	-	-	-	-	-	-	24	15
		Female	-	-	-	-	-	-	50	23
	30-39	Male	-	-	-	-	-	-	25	5
		Female	-	-	-	-	-	-	212	12
	40-49	Male	-	-	-	-	-	-	20	10
		Female	-	-	-	-	-	-	40	35
	50-59	Male	-	-	-	-	-	-	-	-
		Female	-	-	-	-	-	-	-	-
	≥ 60	Male	-	-	-	-	-	-	-	-
		Female	-	-	-	-	-	-	-	-

	Age	Gender	2011		2012		2013		2014	
			Clinical	Non Clinical	Clinical	Non Clinical	Clinical	Non Clinical	Clinical	Non Clinical
Medical Social Officer	<30	Male	5	-	7	-	7	-	19	-
		Female	27	-	20	1	12	1	37	1
	30-39	Male	26	1	33	1	22	1	24	1
		Female	55	1	73	2	91	2	108	3
	40-49	Male	19	1	23	1	29	1	32	1
		Female	10	1	13	1	21	1	24	1
	50-59	Male	9	-	9	-	10	-	11	-
		Female	6	-	5	-	7	-	7	-
	≥ 60	Male	-	2	-	-	-	-	-	-
		Female	1	-	0	-	-	-	-	-
Nutritionist	<30	Male	-	-	6	4	21	4	21	4
		Female	-	-	26	5	102	5	102	5
	30-39	Male	-	-	22	5	22	5	22	5
		Female	-	-	109	47	109	47	109	47
	40-49	Male	-	-	4	5	4	5	4	5
		Female	-	-	3	17	3	17	3	17
	50-59	Male	-	-	2	3	2	3	2	3
		Female	-	-	3	7	3	7	3	6
	≥ 60								1	-
Occupational Therapist	<30	Male	59	2	107	2	145	3	201	3
		Female	175	2	216	2	314	6	461	6
	30-39	Male	67	3	67	3	67	3	67	3
		Female	323	8	323	8	322	8	323	8
	40-49	Male	29	-	29	-	29	-	29	-
		Female	56	1	56	1	56	1	56	1
	50-59	Male	10	4	10	4	10	4	10	4
		Female	11	3	11	3	11	3	11	-
	≥ 60	Male	-	-	-	-	-	3	-	-
		Female	1	1	1	1	-	1	-	-

	Age	Gender	2011		2012		2013		2014	
			Clinical	Non Clinical	Clinical	Non Clinical	Clinical	Non Clinical	Clinical	Non Clinical
Optometrist	<30	Male	10	-	13	-	16	-	16	-
		Female	84	-	87	-	88	-	83	-
	30-39	Male	3	-	6	-	8	-	11	-
		Female	78	4	98	4	115	4	130	4
	40-49	Male	4	-	4	-	2	-	2	-
		Female	9	1	13	1	12	-	13	-
	50-59	Male	1	1	1	1	3	1	3	1
		Female	3	-	4	-	6	1	7	1
Physiotherapist	<30	Male	-	-	-	-	248	2	288	4
		Female	-	-	-	-	490	4	611	4
	30-39	Male	-	-	-	-	85	2	93	-
		Female	-	-	-	-	265	3	284	7
	40-49	Male	-	-	-	-	35	1	34	1
		Female	-	-	-	-	62	3	64	2
	50-59	Male	-	-	-	-	14	-	17	-
		Female	-	-	-	-	29	2	27	4
Radiation Therapist	<30	Male	31	-	25	-	22	-	25	-
		Female	35	-	35	-	28	-	28	-
	30-39	Male	36	-	42	-	45	-	46	-
		Female	57	1	60	2	58	4	68	4
	40-49	Male	1	-	4	-	6	-	5	-
		Female	2	-	2	-	2	-	2	-
	50-59	Male	4	1	3	1	4	-	5	-
		Female	4	1	4	1	5	-	4	-

Source: Allied Health Sciences Division, Ministry of Health. (Unpublished).

Data on age groups for the categories of Allied Health Officers listed below was not available at the time of preparation of this report:

- Dental Nurse
- Dental technologist
- Diagnostic radiographer
- Environmental health officer
- Food technologist
- Health Education officer

## MEDICAL GRADUATES ENTERING THE WORKFORCE

**Table 46:** Number of Medical Graduates entering the workforce, 2000-2013

	House-officers	Percent workforce who are house-officers	Doctors gaining full registration to enter the workforce	Percent of workforce with new full registration	Total number of Doctors in the workforce
2000	996	6.4 %	1026	6.6 %	15619
2001	1029	6.4 %	1223	7.6 %	16146
2002	1104	6.3 %	1164	6.7 %	17442
2003	1083	6.0 %	781	4.3 %	18191
2004	1126	6.2 %	1235	6.8 %	18246
2005	1112	5.5 %	1224	6.1 %	20105
2006	1122	5.1 %	2041	9.3 %	21937
2007	1534	6.5 %	1926	8.1 %	23738
2008	2530	10.1 %	2274	9.1 %	25102
2009	3147	10.3 %	613	2.0 %	30536
2010	3256	9.9 %	2592	7.9 %	32979
2011	3708	10.1 %	3357	9.2 %	36607
2012	4094	10.6 %	3402	8.8 %	38718
2013	4472	9.5 %	3754	8.0 %	46916

Sources: Malaysian Medical Council 2013.  
Human Resources Division, Ministry of Health. (Unpublished).  
Ministry of Health 2014c. (Various years)

**Table 47:** Number of Medical House-Officers entering the workforce by sources of qualification, 2001 - 2014

No.	University	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
<b>Local Public Universities</b>															
1.	University of Malaya (UM)	137	175	182	175	149	144	150	141	150	159	182	188	198	197
2.	National University of Malaysia (UKM)	131	160	162	160	160	142	185	203	173	223	219	259	220	208
3.	University of Science Malaysia (USM)	150	185	201	181	147	159	151	179	191	186	180	193	193	205
4.	University of Malaysia Sarawak (UNIMAS)	38	38	22	33	47	13	76	68	53	79	64	74	39	92
5.	University Putra Malaysia (UPM)	40	54	61	72	82	69	90	81	123	101	131	111	143	99
6.	International Islamic University of Malaysia (IIUM)		46	55	59	74	82	88	88	95	105	121	108	96	128
7.	University of Malaysia Sabah (UMS)	-	-	-	-	-	-	-	29	36	68	75	70	80	81
8.	University of Technology Mara (UITM)	-	-	-	-	-	-	-	19	54	91	116	148	178	182
9.	Islamic Science University of Malaysia (USIM)	-	-	-	-	-	-	-	-	-	-	-	-	-	53
	<b>Sub-total</b>	<b>496</b>	<b>658</b>	<b>683</b>	<b>680</b>	<b>659</b>	<b>609</b>	<b>740</b>	<b>808</b>	<b>875</b>	<b>1012</b>	<b>1088</b>	<b>1151</b>	<b>1147</b>	<b>1245</b>
<b>Local Private Universities/Colleges</b>															
10.	Penang Medical College (PMC)	43	59	23	31	19	132	64	105	97	131	100	97	150	115
11.	International Medical University (IMU)	-	90	76	72	109	64	117	156	148	140	118	231	183	136
12.	Royal College of Medicine Perak (RCMP)	-	23			4	10	53	57	82	63	23	19	136	119
13.	Malacca-Manipal Medical College (MMMC)	-	-	68	124	154	178	130	222	405	271	254	249	258	117
14.	Asian Institute of Medicine and Technology (AIMST)	-	-	-	-	-	-	-	101	119	134	113	108	205	14
15.	Alliance College of Medical Science (AUCMS)	-	-	-	-	-	-	-	-	-	52	30	69	58	89
16.	Monash University (SUNWAY)	-	-	-	-	-	-	-	-	-	29	27	10	71	76
17.	University College Sedaya International (UCSI)	-	-	-	-	-	-	-	-	-	32	43	41	50	32
18.	Cyberjaya University College of Medical Sciences (CUCMS)	-	-	-	-	-	-	-	-	-	-	140	133	126	143
19.	Management & Science University (MSU)	-	-	-	-	-	-	-	-	-	-	29	38	62	186
20.	MAHSA University	-	-	-	-	-	-	-	-	-	-	-	34	142	98
	<b>Sub-total</b>	<b>43</b>	<b>172</b>	<b>167</b>	<b>227</b>	<b>286</b>	<b>384</b>	<b>364</b>	<b>641</b>	<b>851</b>	<b>852</b>	<b>877</b>	<b>1029</b>	<b>1441</b>	<b>1125</b>
	<b>Sub- total Local Graduate</b>	<b>539</b>	<b>830</b>	<b>850</b>	<b>907</b>	<b>945</b>	<b>993</b>	<b>1104</b>	<b>1449</b>	<b>1726</b>	<b>1864</b>	<b>1965</b>	<b>2180</b>	<b>2588</b>	<b>2370</b>
<b>Overseas (see Table 13)</b>															
	<b>Sub-total Overseas Graduate</b>	<b>241</b>	<b>167</b>	<b>109</b>	<b>129</b>	<b>104</b>	<b>66</b>	<b>194</b>	<b>877</b>	<b>1332</b>	<b>1388</b>	<b>1600</b>	<b>1563</b>	<b>2403</b>	<b>1490</b>
	<b>TOTAL GRADUATE</b>	<b>780</b>	<b>997</b>	<b>959</b>	<b>1036</b>	<b>1049</b>	<b>1059</b>	<b>1298</b>	<b>2326</b>	<b>3058</b>	<b>3252</b>	<b>3565</b>	<b>3743</b>	<b>4991</b>	<b>3860</b>

Source: Human Resources Division, Ministry of Health. (Unpublished).



## REGIONAL DISTRIBUTION & SKILL MIX

**Table 48:** Regional Distribution: Doctors and Family Medicine Specialists (per 10,000 population), 2003 - 2014

	Doctors			Family Medicine specialists		
	2003	2010	2014	2003	2010	2014
Peninsular Malaysia west coast region	7.1	9.8	17.91	0.23	0.33	N.A
Peninsular Malaysia east coast region	4.4	6.7	11.98	0.13	0.27	N.A
Sabah	1.7	3.4	7.38	0.05	0.05	N.A
Sarawak	2.9	4	10.45	0.01	0.04	N.A
Source: Ministry of Health 2014b. (Various years). (calculations were done by Health Policy and Planning Unit, Planning Division)						

**Table 49:** Regional Distribution: Dental practitioners and Dental Nurses (per 10,000 Population), 2003 - 2014

	Dental practitioners			Dental Nurses		
	2003	2010	2014	2003	2010	2014
Peninsular Malaysia west coast region	1.2	1.6	2.14	0.6	0.7	0.72
Peninsular Malaysia east coast region	0.8	1.3	2.21	1	1.2	1.20
Sabah	0.4	0.6	0.99	0.8	1	1.06
Sarawak	0.5	0.8	1.49	1.4	1.6	1.58
Source: Ministry of Health 2014b. (Various years). (calculations were done by Health Policy and Planning Unit, Planning Division)						

**Table 50:** Regional Distribution: Pharmacists and Assistant Pharmacists 2003 – 2014

	Pharmacist			Assistant Pharmacist		
	2003	2010	2014	2003	2010	2014
Peninsular Malaysia west coast region	1.6	3.1	4.70	0.9	0.9	1.62
Peninsular Malaysia east coast region	0.7	2	2.87	1.3	1.3	1.92
Sabah	0.4	1.7	2.53	1.2	1.2	1.51
Sarawak	0.8	2.2	3.70	1.3	1.3	1.88
Source: Ministry of Health 2014b. (Various years). (calculations were done by Health Policy and Planning Unit, Planning Division)						

**Table 51:** Regional Distribution: Assistant Medical Officers 2003 - 2014

	2003	2010	2014
Peninsular Malaysia west coast region	2.2	3.4	3.8
Peninsular Malaysia east coast region	2.6	4.3	5.1
Sabah	2.1	3.1	4.1
Sarawak	4.2	5.3	6.3
Source: Ministry of Health 2014b. (Various years). (calculations were done by Health Policy and Planning Unit, Planning Division)			

**Table 52:** Regional Distribution: Nurses, Assistant Nurses, Midwives and Community Nurses (per 10,000 Population), 2003 - 2014

	Nurses			Assistant Nurse			Midwife Division 2*			Community Nurse**		
	2003	2010	2014	2003	2010	2014	2003	2010	2014	2003	2010	2014
Peninsular Malaysia west coast region	11	15.3	32.2	1.42	0.38	0.92	0.42	0.16	0.04	2.88	5.67	6.77
Peninsular Malaysia east coast region	12.8	12.8	25.3	2.22	0.76	0.39	0.91	0.38	0.09	6.32	9.92	11.16
Sabah	4.7	8.5	20.4	3.96	1.68	0.28	0.00	0.00	0.00	4.60	8.45	11.29
Sarawak	8.9	10	24.5	0.77	0.18	0.47	0.23	0.04	0.02	8.90	10.00	12.26
* Employed by MOH only												
** Exclude Midwives												
Source: Ministry of Health 2014b. (Various years). (calculations were done by Health Policy and Planning Unit, Planning Division)												

**Table 53:** Regional Distribution: Medical Laboratory Technologists, Radiographers and Physiotherapists (per 10,000 Population), 2003-2014

	MLT			Radiographers			Physiotherapists		
	2003	2010	2014	2003	2010	2014	2003	2010	2014
Peninsular Malaysia west coast region	1.02	1.03	1.932	0.26	0.26	0.889	0.2	0.3	0.409
Peninsular Malaysia east coast region	0.66	0.98	2.363	0.12	0.15	0.934	0.1	0.3	0.511
Sabah	0.43	0.66	2.156	0.05	0.06	0.802	0.2	0.3	0.472
Sarawak	0.13	0.18	3.132	0.1	0.07	1.22	0.2	0.4	0.61
Source: Ministry of Health 2014b. (Various years). (calculations were done by Health Policy and Planning Unit, Planning Division)									

**Table 54:** Regional Distribution: Hospital-Based Specialist Medical Practitioners (per 10,000 Population), 2010 and 2013

	Peninsular Malaysia West Coast region		Peninsular Malaysia East Coast region		Sarawak		Sabah	
	2010	2013	2010	2013	2010	2013	2010	2013
Anaesthesiology	0.3	0.32	0.16	0.17	0.14	0.13	0.08	0.1
Surgery	0.38	0.42	0.22	0.21	0.19	0.21	0.1	0.13
Orthopaedic surgery	0.23	0.25	0.17	0.15	0.11	0.11	0.05	0.07
Medicine	0.56	0.64	0.27	0.26	0.26	0.29	0.18	0.17
Paediatrics	0.28	0.3	0.14	0.17	0.14	0.16	0.07	0.09
Obstetrics and Gynaecology	0.34	0.37	0.15	0.19	0.17	0.2	0.12	0.11
Source: Clinical Research Centre 2012 and 2015a.								

**Table 55:** Comparative Regional Distribution of Selected Categories in 2014

	Doctors	Assistant Medical officers
Peninsular Malaysia west coast region	17.91	3.8
Peninsular Malaysia east coast region	11.98	5.1
Sabah	7.38	4.1
Sarawak	10.45	6.3
	Nurses	Community Nurses
Peninsular Malaysia west coast region	32.2	6.77
Peninsular Malaysia east coast region	25.3	11.16
Sabah	20.4	11.29
Sarawak	24.5	12.26
	Dental practitioners	Dental Nurses
Peninsular Malaysia west coast region	2.14	0.72
Peninsular Malaysia east coast region	2.21	1.20
Sabah	0.99	1.06
Sarawak	1.49	1.58
	Pharmacists	Assistant Pharmacists
Peninsular Malaysia west coast region	4.70	1.62
Peninsular Malaysia east coast region	2.87	1.92
Sabah	2.53	1.51
Sarawak	3.70	1.88
Source: Ministry of Health 2014b. (Various years). (calculations were done by Health Policy and Planning Unit, Planning Division)		

Table 56: Regional Distribution of Allied Health personnel

	2003					2010					2014				
	PM West	PM East	Sabah	Sarawak	PM West	PM East	Sabah	Sarawak	PM West	PM East	Sabah	Sarawak	PM West	PM East	Sabah
Audiologist	-	-	1	2	-	-	-	7	3	92	50	14	11	14	11
per 100,000 population	-	-	0.04	0.09	-	-	-	0.22	0.12	0.31	0.17	0.04	0.04	0.04	0.04
Clinical psychologist	-	-	-	-	-	-	-	-	-	9	4	1	-	-	-
per 100,000 population	-	-	-	-	-	-	-	-	-	0.03	0.01	0.00	-	-	-
Assistant food technologist	-	-	8	9	-	-	-	17	9	125	32	25	15	32	15
per 100,000 population	-	-	0.29	0.41	-	-	-	0.53	0.36	0.42	0.11	0.07	0.06	0.11	0.06
Assistant pharmacist	1401	478	320	296	1902	577	436	391	3155	851	523	469	3155	851	523
per 100,000 population	0.87	1.26	11.45	13.37	1.03	1.42	13.60	15.82	1.62	1.92	1.46	1.80	1.62	1.92	1.46
Clinical scientist (biochemist)	-	-	11	7	-	-	30	30	255	71	32	31	255	71	32
per 100,000 population	-	-	0.39	0.32	-	-	0.94	1.21	0.85	0.24	0.09	0.12	0.85	0.24	0.09
Clinical scientist (biomedical scientist)	-	-	-	-	-	-	-	-	53	8	5	2	53	8	5
per 100,000 population	-	-	-	-	-	-	-	0.08	0.18	0.03	0.01	0.01	0.18	0.03	0.01
Clinical scientist (embryologist)	-	-	-	-	-	-	29	18	6	2	2	0	6	2	2
per 100,000 population	-	-	-	-	-	-	0.90	0.73	0.02	0.01	0.01	0.00	0.02	0.01	0.01
Clinical scientist (medical geneticist)	-	-	-	-	-	-	-	-	20	-	-	-	20	-	-
per 100,000 population	-	-	-	-	-	-	-	-	0.07	-	-	-	0.07	-	-
Clinical scientist (microbiologist)	-	-	13	6	-	-	29	18	211	61	31	22	211	61	31
per 100,000 population	-	-	0.47	0.27	-	-	0.90	0.73	0.70	0.20	0.09	0.08	0.70	0.20	0.09
Counsellor	-	-	2	5	-	-	7	10	125	13	13	10	125	13	13
per 100,000 population	-	-	0.07	0.23	-	-	0.22	0.40	0.42	0.04	0.04	0.04	0.42	0.04	0.04
Dental Nurse	964	388	161	302	1272	486	314	400	1395	532	366	412	1395	532	366
per 100,000 population	0.60	1.02	5.76	13.64	0.69	1.19	9.79	19.19	0.72	1.20	1.02	1.58	0.72	1.20	1.02
Dental technologist	322	136	31	71	422	180	57	87	514	207	95	112	514	207	95
per 100,000 population	0.20	0.36	1.11	3.21	0.23	0.44	1.78	3.52	0.26	0.47	0.27	0.43	0.26	0.47	0.27

	2003						2010				2014			
	PM West	PM East	Sabah	Sarawak	PM West	PM East	Sabah	Sarawak	PM West	PM East	Sabah	Sarawak	PM East	Sabah
Diagnostic radiographer	-	-	54	74	-	-	-	186	196	1502	440	348	266	
per 100,000 population	-	-	1.93	3.34	-	-	-	5.80	7.93	4.99	1.46	1.16	0.88	
Dietician	-	-	9	9	-	-	-	23	21	192	97	25	25	
per 100,000 population	-	-	0.32	0.32	-	-	-	0.72	0.85	0.64	0.32	0.07	0.10	
Entomologist	-	-	6	8	-	-	-	9	12	60	27	14	18	
per 100,000 population	-	-	0.21	0.36	-	-	-	0.28	0.49	0.20	0.10	0.04	0.07	
Environmental health officer	1026	465	220	235	1676	665	415	451	2179	840	668	734		
per 100,000 population	0.63	1.23	7.87	10.61	0.91	1.61	12.94	18.25	1.12	1.90	1.92	2.82		
Food technologist	-	-	9	5	-	-	-	17	9	306	63	42	29	
per 100,000 population	-	-	0.32	0.23	-	-	-	0.53	0.36	1.02	0.21	0.12	0.11	
Forensic science officer	-	-	0	N.A	-	-	-	3	3	24	9	4	5	
per 100,000 population	-	-	0.00	0.00	-	-	-	0.09	0.12	0.08	0.03	0.01	0.02	
Healthcare food service officer	-	-	8	8	-	-	-	30	16	204	63	39	26	
per 100,000 population	-	-	0.29	0.36	-	-	-	0.94	0.65	0.68	0.21	0.11	0.10	
Health education officer	-	-	13	11	-	-	-	13	13	189	22	16		
per 100,000 population	-	-	0.47	0.50	-	-	-	0.41	0.53	0.63	0.06	0.06	0.06	
Medical laboratory technologist	1711	471	279	406	2949	768	591	652	3757	1079	746	816		
per 100,000 population	1.06	1.24	9.98	18.34	1.59	1.88	18.43	26.38	12.48	3.58	2.08	3.13		
Medical physicist	-	-	1	5	-	-	-	3	12	151	20	12	19	
per 100,000 population	-	-	0.04	0.23	-	-	-	0.09	0.49	0.50	0.07	0.03	0.07	
Medical record officer	-	-	23	23	-	-	-	36	30	249	66	49	41	
per 100,000 population	-	-	0.82	1.04	-	-	-	1.12	1.21	0.83	0.22	0.14	0.16	
Medical social officer	-	-	7	8	-	-	-	15	22	166	41	27	29	
per 100,000 population	-	-	0.25	0.36	-	-	-	0.47	0.89	0.55	0.14	0.08	0.11	

	2003					2010					2014					
	PM West	PM East	Sabah	Sarawak	PM West	PM East	Sabah	Sarawak	PM West	PM East	Sabah	Sarawak	PM West	PM East	Sabah	Sarawak
Nutritionist	-	-	7	7	-	-	-	25	19	232	87	38	35			
per 100,000 population	-	-	0.25	0.32	-	-	-	0.78	0.77	0.77	0.29	0.11	0.13			
Occupational therapist	-	-	22	22	410	88	75	73	669	199	157	117				
per 100,000 population	-	-	0.79	0.99	0.22	0.22	3.34	2.95	2.22	0.66	0.44	0.45				
Optician	-	-	-	-	2383	175	137	132	2604	192	153	174				
per 100,000 population	-	-	-	-	1.29	0.43	0.42	0.53	1.34	0.43	0.43	0.67				
Optometrist	-	-	3	4	701	111	14	13	1128	167	19	22				
per 100,000 population	-	-	0.11	0.18	0.38	0.27	0.44	0.53	0.58	0.38	0.05	0.08				
Physiotherapist	252	47	40	38	486	113	108	97	823	280	168	171				
per 100,000 population	0.16	0.12	1.43	1.72	0.26	0.28	3.37	3.93	2.73	0.93	0.47	0.66				
Radiation therapist	-	-	-	22	-	-	13	44	91	13	19	38				
per 100,000 population	-	-	-	0.99	-	-	0.41	1.78	0.30	0.04	0.05	0.15				
Speech /language therapist	-	-	1	1	-	-	4	4	59	14	8	6				
per 100,000 population	-	-	0.04	0.05	-	-	0.12	0.16	0.20	0.05	0.02	0.02				
* N.A for West and East PM but available for Sabah/Sarawak. Source: Allied Health Sciences Division, Ministry of Health. (Unpublished).																

\* N.A for West and East PM but available for Sabah/Sarawak.

Source: Allied Health Sciences Division, Ministry of Health. (Unpublished).

**Table 57:** Skill Mix: Ratios of Selected Professionals to Allied Health Professionals in the MOH

	2013	2014		2013	2014
Otorhinolaryngologist to audiologist	1:1	1:1.3	Oncologist to radiation therapist	1:11	1:10.1
Otorhinolaryngologist to speech language therapist	1:1	1:1.2	Nuclear medicine physician to medical physicist	1:25	1:1.13
Ophthalmologist to optometrist	1:1	1:1.4	Public Health Medicine Specialist to entomologist	1:0.2	1:0.3
Psychiatrist to clinical psychologist	1:0.02	1:0.1	Doctor to dietician	1:0.01	1:0.01
Pathologist to medical laboratory technologist	1:40	1:25.3	Doctor to health education officer	1:0.004	1:0.008
Forensic pathologist to forensic science officer	1:2	1:2	Public Health Medicine Specialist to Environmental Health Officer	1:5.1	1:7.5
Chemical pathologist to clinical scientist(embryologist)	1:19	1:12.95	Doctor to medical social officer	1:0.01	1:0.01
Histo- and cyto-pathologist and haematologist to clinical scientist (biomedical scientist)	1:0.4	1:0.40	Doctor to counsellor	1:0.003	1:0.007
Gynaecologist to clinical scientist (embryologist)	1:0.02	1:0.04	Dietician to healthcare food service officer	1:1	1:0.98
Medical microbiologist to clinical scientist (microbiologist)	1:10	1:6.6	Family health physician to nutritionist	1:1	1:2
Radiologist to diagnostic radiographer	1:12	1:10.7	Medical rehab specialist to occupational therapist	1:35	1:27.9
Radiologist to medical physicist	1:1	1:0.88	Medical rehab specialist to physiotherapist	1:42	1:35
Oncologist to medical physicist	1:7	1:6.96	Medical rehabilitation specialist to speech language therapist	1:3	1:2.12
			Food technologist to assistant food technologist	1:0.4	1:0.4

Source: Allied Health Sciences Division, Ministry of Health. (Unpublished).

## EDUCATION & LEGISLATION

**Table 58:** Allied Health Officers: Training Programs, 2014

	Public			Private			Total no of programmes/ no of institutions
	Diploma	Degree	Subtotal programmes/ No of Institutions	Diploma	Degree	Subtotal programmes/ No of Institutions	
Audiologist	-	3	3/3	-	-	-	3/3
Assistant food technologist	1	2	3/2	-	1	1/1	4/3
Assistant pharmacist	1	-	1/1	26	-	26/26	27/27
Clinical psychologist	-	2	2/2	-	1	1/1	3/3
Clinical scientist (biochemist)	-	3	3/3	-	2	2/2	5/5
Clinical scientist (biomedical scientist)	-	5	5/5	-	7	7/7	12/12
Clinical scientist (embryologist)	-	4	4/4	-	-	-	4/4
Clinical scientist (medical geneticist)	-	2	2/2	-	-	-	2/2
Clinical scientist (microbiologist)	-	4	4/4	-	1	1/1	5/5
Counsellor	-	5	5/5	-	2	2/2	7/7
Dental Nurse	1	-	1/1	-	-	-	1/1
Dental technologist	1	-	1/1	1	-	1/1	2/2
Diagnostic radiographer	4	4	8/7	16	4	20/16	28/23
Dietician	-	6	6/6	-	1	1/1	7/7
Entomologist	-	1	1/1	-	-	-	1/1
Environmental health officer	2	3	5/4	12	1	13/12	18/16
Food technologist	-	7	7/7	-	-	-	7/7
Forensic science officer	-	2	2/2	-	-	-	2/2
Healthcare food service officer	1	3	4/3	-	1	1/1	5/4
Health education officer	-	1	1/1	-	-	-	1/1
Medical geneticist	-	1	1/1	-	-	-	1/1
Medical laboratory technologist	7	1	8/7	41	3	44/41	52/48
Medical physicist	1	3	4/4	-	-	-	4/4
Medical social officer	-	8	8/8	-	-	-	8/8
Nutritionist	-	3	3/3	-	-	-	3/3



	Public			Private			Total no of programmes/ no of institutions
	Diploma	Degree	Subtotal programmes/ No of Institutions	Diploma	Degree	Subtotal programmes/ No of Institutions	
Occupational therapist	2	2	4/3	7	1	8/8	12/11
Optician	-	-	-	3	-	-	3/3
Optometrist	-	3	3/3	nil	3	3/3	6/6
Physiotherapist	3	3	6/5	29	10	39/30	45/35
Radiation therapist	1	3	4/4	2	1	3/3	7/7
Speech /language therapist	-	2	2/2	-	-	-	2/2
Assistant Medical Officer	1	-	1/1	14	-	14/14	15/15
Source: Division of Allied Health Sciences, Ministry of Health (Unpublished).							

**Table 59:** Table of Entrants, Enrolment and Graduates for Public Sector Universities

PROFESSION	YEAR	EDUCATION LEVEL	CITIZENSHIP	ENTRANTS			ENROLMENT			GRADUATES		
				MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Doctor	2008	Bachelor's Degree	Malaysian	518	805	1323	2407	3754	6161	275	453	728
			Non Malaysian	-	2	2	4	5	9	-	1	1
		Masters	Malaysian	203	333	536	650	917	1567	132	187	319
			Non Malaysian	90	50	140	174	77	251	54	14	68
		PhD	Malaysian	2	18	20	29	68	97	4	9	13
			Non Malaysian	6	5	11	15	11	26	-	-	-
	2009	Bachelor's Degree	Malaysian	526	856	1382	2556	3996	6552	337	562	899
			Non Malaysian	1	1	2	7	5	12	-	-	-
		Masters	Malaysian	219	331	550	925	1451	2376	142	164	306
			Non Malaysian	63	35	98	217	117	334	44	16	60
		PhD	Malaysian	11	30	41	38	89	127	4	3	7
			Non Malaysian	7	4	11	23	15	38	-	1	1
	2010	Bachelor's Degree	Malaysian	524	981	1505	2590	4263	6853	373	630	1003
			Non Malaysian	-	5	5	8	13	21	1	-	1
		Masters	Malaysian	275	396	671	1004	1552	2556	151	228	379
			Non Malaysian	71	42	113	236	126	362	40	20	60
		PhD	Malaysian	17	29	46	49	115	164	5	5	10
			Non Malaysian	11	4	15	32	21	53	3	-	3
	2011	Bachelor's Degree	Malaysian	532	973	1505	2764	4594	7358	371	626	997
			Non Malaysian	-	2	2	8	12	20	1	1	2
		Masters	Malaysian	276	431	707	1088	1702	2790	113	200	313
			Non Malaysian	49	43	92	211	134	345	40	27	67
		PhD	Malaysian	23	46	69	60	129	189	5	11	16
			Non Malaysian	28	20	48	68	43	111	4	2	6

PROFESSION	YEAR	EDUCATION LEVEL	CITIZENSHIP	ENTRANTS			ENROLMENT			GRADUATES		
				MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Doctor	2012	Bachelor's Degree	Malaysian	491	1036	1527	2570	4574	7144	381	605	986
			Non Malaysian	-	2	2	8	13	21	-	1	1
		Masters	Malaysian	276	457	733	1136	1842	2978	212	341	553
			Non Malaysian	18	17	35	175	105	280	53	39	92
		PhD	Malaysian	23	48	71	106	240	346	10	22	32
			Non Malaysian	15	22	37	108	79	187	14	4	18
	2013	Bachelor's Degree	Malaysian	509	1005	1514	2741	4997	7738	464	780	1244
			Non Malaysian	1	2	3	7	12	19	-	1	1
		Post degree diploma	Malaysian	-	-	-	1	1	2	-	-	-
			Non Malaysian	-	-	-	-	-	-	-	-	-
		Masters	Malaysian	281	513	794	1285	2111	3396	199	345	544
			Non Malaysian	17	23	40	160	116	276	52	21	73
	2014	PhD	Malaysian	19	32	51	83	179	262	5	15	20
			Non Malaysian	9	7	16	74	47	121	7	5	12
		Bachelor's Degree	Malaysian	373	801	1174	2716	5185	7901	488	821	1309
			Non Malaysian	2	0	2	6	12	18	1	1	2
		Post degree diploma	Malaysian	-	-	-	1	1	2	-	-	-
			Non Malaysian	-	-	-	-	-	-	-	-	-
		Masters	Malaysian	365	647	1012	1532	2500	4032	205	334	539
			Non Malaysian	22	28	50	142	114	256	37	25	62
		PhD	Malaysian	11	33	44	75	165	240	14	16	30
			Non Malaysian	9	7	16	57	28	85	8	4	12

PROFESSION	YEAR	EDUCATION LEVEL	CITIZENSHIP	ENTRANTS			ENROLMENT			GRADUATES		
				MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Nurse	2008	Diploma	Malaysian	78	499	577	206	1120	1326	24	101	125
			Non Malaysian	-	3	3	-	4	4	-	-	-
		Bachelor's Degree	Malaysian	31	267	298	72	765	837	7	128	135
			Non Malaysian	-	-	-	-	-	-	-	1	1
		Post degree diploma	Malaysian	-	25	25	-	25	25	-	-	-
			Non Malaysian	-	1	1	2	1	3	-	-	-
		Masters	Malaysian	15	34	49	17	43	60	9	25	34
			Non Malaysian	4	7	11	8	7	15	1	2	3
	2009	PhD	Malaysian	3	22	25	12	38	50	2	8	10
			Non Malaysian	9	11	20	16	10	26	3	1	4
		Diploma	Malaysian	75	362	437	219	1213	1432	33	189	222
			Non Malaysian	-	-	-	-	2	2	-	-	-
		Bachelor's Degree	Malaysian	27	329	356	93	926	1019	7	160	167
			Non Malaysian	-	1	1	2	1	3	-	-	-
		Post degree diploma	Malaysian	-	21	21	-	22	22	-	25	25
			Non Malaysian	-	-	-	-	1	1	-	-	-
	2010	Masters	Malaysian	3	51	54	77	224	301	15	30	45
			Non Malaysian	9	13	22	24	31	55	2	1	3
		PhD	Malaysian	10	22	32	17	52	69	3	3	6
			Non Malaysian	12	7	19	22	9	31	2	-	2
		Diploma	Malaysian	73	284	357	215	1060	1275	61	271	332
			Non Malaysian	-	-	-	-	-	-	-	-	-
		Bachelor's Degree	Malaysian	37	303	340	110	992	1102	18	215	233
			Non Malaysian	1	-	1	3	-	3	-	-	-
		Post degree diploma	Malaysian	-	14	14	-	14	14	-	22	22
			Non Malaysian	-	-	-	-	-	-	-	-	-

PROFESSION	YEAR	EDUCATION LEVEL	CITIZENSHIP	ENTRANTS			ENROLMENT			GRADUATES		
				MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Nurse	2010	Masters	Malaysian	19	78	97	65	206	271	19	52	71
			Non Malaysian	10	2	12	17	20	37	7	4	11
		PhD	Malaysian	8	20	28	25	77	102	5	4	9
			Non Malaysian	6	5	11	31	21	52	2	-	2
	2011	Diploma	Malaysian	64	399	463	192	1015	1207	60	364	424
			Non Malaysian	-	-	-	-	-	-	-	1	1
		Bachelor's Degree	Malaysian	32	289	321	117	1078	1195	18	236	254
			Non Malaysian	2	1	3	5	1	6	-	-	-
		Post degree diploma	Malaysian	-	26	26	-	26	26	-	13	13
			Non Malaysian	-	-	-	-	-	-	-	-	-
		Masters	Malaysian	41	122	163	85	285	370	2	21	23
			Non Malaysian	2	18	20	30	30	60	3	5	8
	2012	PhD	Malaysian	14	28	42	39	102	141	1	6	7
			Non Malaysian	7	5	12	37	21	58	1	2	3
		Diploma	Malaysian	35	280	315	127	765	892	63	317	380
			Non Malaysian	-	-	-	-	-	-	-	-	-
		Bachelor's Degree	Malaysian	39	272	311	121	1019	1140	25	286	311
			Non Malaysian	-	2	2	4	2	6	-	-	-
		Post degree diploma	Malaysian	-	22	22	-	23	23	-	25	25
			Non Malaysian	-	-	-	-	-	-	-	-	-
		Masters	Malaysian	28	88	116	68	276	344	24	67	91
			Non Malaysian	3	7	10	9	21	30	6	5	11
		PhD	Malaysian	3	12	15	15	45	60	-	1	1
			Non Malaysian	-	-	-	1	-	1	1	-	1

PROFESSION	YEAR	EDUCATION LEVEL	CITIZENSHIP	ENTRANTS			ENROLMENT			GRADUATES		
				MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Nurse	2013	Diploma	Malaysian	20	239	259	81	762	843	54	272	326
			Non Malaysian	-	-	-	-	-	-	-	-	-
		Bachelor's Degree	Malaysian	21	275	296	114	1024	1138	28	280	308
			Non Malaysian	-	2	2	3	3	6	2	1	3
		Post degree diploma	Malaysian	-	14	14	-	15	15	-	23	23
			Non Malaysian	-	-	-	-	-	-	-	-	-
		Masters	Malaysian	38	86	124	138	348	486	26	78	104
			Non Malaysian	-	2	2	27	23	50	4	10	14
		PhD	Malaysian	18	50	68	60	175	235	8	15	23
			Non Malaysian	5	13	18	34	44	78	9	7	16
	2014	Diploma	Malaysian	51	243	294	91	717	808	38	231	269
			Non Malaysian	-	-	-	-	-	-	-	-	-
		Bachelor's Degree	Malaysian	35	267	302	118	1050	1168	29	221	250
			Non Malaysian	-	1	1	1	1	2	1	-	1
		Post degree diploma	Malaysian	-	19	19	-	21	21	-	13	13
			Non Malaysian	-	-	-	-	-	-	-	-	-
		Masters	Malaysian	13	47	60	89	230	319	15	64	79
			Non Malaysian	1	1	2	17	13	30	10	13	23
		PhD	Malaysian	17	52	69	72	226	298	12	14	26
			Non Malaysian	14	13	27	46	55	101	6	6	12
Dental practitioners	2008	Bachelor's Degree	Malaysian	75	234	309	314	930	1244	16	131	147
			Non Malaysian	-	-	-	2	1	3	-	-	-
		Masters	Malaysian	9	29	38	20	65	85	7	22	29
			Non Malaysian	12	10	22	52	18	70	15	-	15
		PhD	Malaysian	-	1	1	2	7	9	-	1	1
			Non Malaysian	5	7	12	17	5	22	1	2	3

PROFESSION	YEAR	EDUCATION LEVEL	CITIZENSHIP	ENTRANTS			ENROLMENT			GRADUATES		
				MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Dental practitioners	2009	Bachelor's Degree	Malaysian	71	210	281	326	1015	1341	54	129	183
			Non Malaysian	1	1	2	2	2	4	-	-	-
		Masters	Malaysian	14	22	36	31	79	110	4	4	8
			Non Malaysian	7	6	13	51	28	79	10	-	10
		PhD	Malaysian	2	5	7		8	8	2	-	2
			Non Malaysian	-	-	-	15	7	22	1	-	1
	2010	Bachelor's Degree	Malaysian	68	228	296	344	1084	1428	43	135	178
			Non Malaysian	1	-	1	4	2	6	1	-	1
		Masters	Malaysian	10	33	43	29	68	97	3	7	10
			Non Malaysian	9	9	18	37	21	58	11	9	20
		PhD	Malaysian	6	26	32	18	71	89	-	-	-
			Non Malaysian	7	2	9	23	14	37	2	-	2
	2011	Bachelor's Degree	Malaysian	66	240	306	365	1173	1538	37	142	179
			Non Malaysian	-	-	-	4	3	7	-	-	-
		Masters	Malaysian	5	22	27	45	121	166	3	11	14
			Non Malaysian	12	5	17	36	17	53	11	9	20
		PhD	Malaysian	2	12	14	8	43	51	2	6	8
			Non Malaysian	7	7	14	27	17	44	3	-	3
	2012	Bachelor's Degree	Malaysian	61	256	317	346	1170	1516	55	149	204
			Non Malaysian	-	-	-	4	3	7	2	-	2
		Masters	Malaysian	6	13	19	40	120	160	8	16	24
			Non Malaysian	6	1	7	27	16	43	9	4	13
		PhD	Malaysian	6	7	13	16	44	60	-	9	9
			Non Malaysian	2	1	3	28	18	46	1	-	1
	2013	Bachelor's Degree	Malaysian	90	228	318	412	1306	1718	62	217	279
			Non Malaysian	-	1	1	5	4	9	-	-	-
		Masters	Malaysian	11	35	46	41	114	155	10	28	38
			Non Malaysian	8	12	20	26	19	45	7	9	16

PROFESSION	YEAR	EDUCATION LEVEL	CITIZENSHIP	ENTRANTS			ENROLMENT			GRADUATES		
				MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Dental practitioners	2013	PhD	Malaysian	15	32	47	27	63	90	2	7	9
			Non Malaysian	10	3	13	35	19	54	7	2	9
	2014	Bachelor's Degree	Malaysian	72	235	308	412	1338	1750	74	207	281
			Non Malaysian	-	-	-	4	3	7	1	1	2
		Masters	Malaysian	9	21	30	44	103	147	7	45	52
			Non Malaysian	8	9	17	32	25	57	2	3	5
		PhD	Malaysian	9	24	33	37	86	123	3	2	5
			Non Malaysian	14	4	18	45	22	67	2	2	4
	2008	Diploma	Malaysian	37	102	139	158	396	554	13	37	50
			Non Malaysian	-	-	-	-	-	-	-	-	-
		Bachelor's Degree	Malaysian	122	325	447	571	1368	1939	87	286	373
			Non Malaysian	1	-	1	2	5	7	-	2	2
		Masters	Malaysian	14	73	87	34	138	172	5	32	37
			Non Malaysian	18	10	28	59	24	83	12	8	20
		PhD	Malaysian	3	7	10	19	28	47	2	2	4
			Non Malaysian	18	6	24	72	21	93	3	1	4
	2009	Diploma	Malaysian	57	124	181	142	337	479	45	110	155
			Non Malaysian	-	-	-	-	-	-	-	-	-
		Bachelor's Degree	Malaysian	126	430	556	564	1413	1977	117	329	446
			Non Malaysian	1	-	1	3	2	5	-	1	1
		Masters	Malaysian	16	58	74	44	158	202	6	38	44
			Non Malaysian	9	6	15	49	29	78	16	5	21
		PhD	Malaysian	5	4	9	25	38	63	-	1	1
			Non Malaysian	12	5	17	89	25	114	6	2	8
	2010	Diploma	Malaysian	40	93	133	135	328	463	36	87	123
			Non Malaysian	-	-	-	-	-	-	-	-	-



PROFESSION	YEAR	EDUCATION LEVEL	CITIZENSHIP	ENTRANTS			ENROLMENT			GRADUATES		
				MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Pharmacist	2010	Bachelor's Degree	Malaysian	144	403	547	551	1478	2029	149	314	463
			Non Malaysian	-	1	1	3	1	4	1	2	3
		Masters	Malaysian	21	101	122	41	194	235	11	39	50
			Non Malaysian	13	9	22	43	24	67	15	8	23
		PhD	Malaysian	5	5	10	24	32	56	4	4	8
			Non Malaysian	16	11	27	98	36	134	8	2	10
	2011	Diploma	Malaysian	30	107	137	120	319	439	37	79	116
			Non Malaysian	-	-	-	-	-	-	-	-	-
		Bachelor's Degree	Malaysian	139	412	551	553	1576	2129	136	321	457
			Non Malaysian	-	-	-	2	-	2	-	-	-
		Masters	Malaysian	33	108	141	76	254	330	6	62	68
			Non Malaysian	14	8	22	38	28	66	11	7	18
	2012	PhD	Malaysian	3	20	23	27	55	82	1	5	6
			Non Malaysian	41	17	58	132	46	178	15	8	23
		Diploma	Malaysian	25	66	91	90	265	355	35	77	112
			Non Malaysian	-	-	-	-	-	-	-	-	-
		Bachelor's Degree	Malaysian	127	464	591	558	1710	2268	109	242	351
			Non Malaysian	-	-	-	1	1	2	-	-	-
	2013	Masters	Malaysian	27	53	80	77	220	297	13	66	79
			Non Malaysian	9	6	15	29	24	53	10	12	22
		PhD	Malaysian	7	19	26	31	72	103	4	10	14
			Non Malaysian	13	8	21	123	47	170	15	4	19
		Diploma	Malaysian	28	90	118	76	248	324	40	95	135
			Non Malaysian	-	-	-	-	-	-	-	-	-
	2013	Bachelor's Degree	Malaysian	77	291	368	523	1671	2194	127	419	546
			Non Malaysian	-	-	-	1	2	3	1	-	1

PROFESSION	YEAR	EDUCATION LEVEL	CITIZENSHIP	ENTRANTS			ENROLMENT			GRADUATES		
				MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Pharmacist	2013	Masters	Malaysian	15	77	92	76	245	321	13	58	71
			Non Malaysian	14	10	24	30	22	52	9	9	18
		PhD	Malaysian	3	6	9	31	74	105	3	6	9
			Non Malaysian	9	6	15	115	49	164	21	8	29
	2014	Diploma	Malaysian	44	117	161	89	257	346	26	98	124
			Non Malaysian	-	-	-	-	-	-	-	-	-
		Bachelor's Degree	Malaysian	78	307	385	455	1571	2026	143	400	543
			Non Malaysian	-	-	-	-	2	2	-	-	-
		Masters	Malaysian	18	58	76	65	198	263	21	83	104
			Non Malaysian	10	4	14	35	20	55	7	6	13
		PhD	Malaysian	3	20	23	33	87	120	4	7	11
			Non Malaysian	15	4	19	95	38	133	18	11	29

Source: Ministry of Higher Education. (Unpublished).

## ANNEX 2. KEY LEGISLATION GOVERNING THE PROFESSIONAL PRACTICE OF HRH IN MALAYSIA

Professionals	Key Legislation	Statutory Body
Medical practitioners	Medical Act 1971 and subsequent amendments and regulations under the Act	Malaysian Medical Council
Dental practitioners	Dental Act 1971 and subsequent amendments and regulations	Malaysian Dental Council
Pharmacist	Registration of pharmacist Act 1951 and regulation under the Act	Pharmacy Board of Malaysia
Nurses, Midwives, Community Nurses and Assistant Nurses	Nurses Act 1950 and Nurses Regulation 1985 Midwives Act 1966 and Midwives Registration 1990 (fees)	Nursing Board of Malaysia
Assistant Medical Officers	Assistant Medical Officers Act 1977 and subsequent amendments and regulations under the Act	Assistant Medical Officers Board of Malaysia
Opticians and Optometrist	Optical Act 1991 and Optical Regulations 1994	Malaysian Optical Council
Food Analyst	Food Analyst 2011 and Food Analyst Regulations 2013	Malaysian Food Analyst Council
Counsellor	Malaysian Counsellor Act 1998	Board of Counsellors
Traditional and Complementary Medicine Practitioners	Traditional and Complementary Medicine Act 2013	Traditional and Complementary Medicine Council will be formed after enforcement of the Act
Medical Physicist	Atomic Energy Licensing Act 1984 (Act 304)	Atomic Energy Licensing Board
Diagnostic Radiographer	Atomic Energy Licensing Act 1984 (Act 304)	Atomic Energy Licensing Board
Radiation Therapist	Atomic Energy Licensing Act 1984 (Act 304)	Atomic Energy Licensing Board
Environmental Health Officer	Destruction of Disease Bearing Insect (Act 154) 1975	Ministry of Health
Environmental Health Officer	Prevention and Control of Infectious Diseases Act 1988 (Act 342)	Ministry of Health

Source: Respective Councils and Boards

## ANNEX 3. DEFINITIONS OF SELECTED TERMS USED IN THIS REPORT

Nurses	Individuals who have successfully completed accredited basic nursing courses at diploma or degree and have been placed on the Nursing Register. They are known as “Registered Nurses”.
Community Nurses	Individuals who have successfully completed an accredited basic community nursing course at certificate level and have been placed on the Nursing Register. Midwifery for normal deliveries is part of the basic educational programme.
Assistant Nurse	Individuals who have successfully completed a two year accredited nursing course at certificate level and been place in Nursing Register.
Midwives	Registered Nurses who have successfully completed an accredited post-basic education programme in Midwifery and are registered in Part I of the Nursing Register. Midwives also include all Community Nurses who have successfully completed the basic education programme for Community Nursing which includes midwifery for normal childbirth. Such individuals are placed in Part III of the Nursing Register
Doctors	Medical practitioners who have successfully completed an accredited basic medical education programme, have successfully completed training as a trainee medical officer, and been placed on the Medical Register as “Fully Registered”. It includes those who are serving the initial two year compulsory posting in a public sector institution.
House-officers	Medical graduate who have successfully completed an accredited basic medical education programme and are undergoing training as a trainee medical officer in a recognised institution. Most have been placed on the Medical Register as “Provisionally Registered”.
Dental Practitioner	Individuals who have successfully completed an accredited basic dental education programme and have been placed on the Dental Register. It includes individuals who are undergoing the two year compulsory posting in a public facility.
Specialist Medical and Dental practitioners	Individuals who have successfully completed defined post-graduate education programmes in defined specialties, and successfully completed defined periods of experience and have demonstrable competency in the specialty.
Pharmacist	Individuals who have successfully completed an accredited basic pharmacy education programme and have been placed on the Pharmacy Register. It includes individuals who are undergoing the one year trainee period and those who are serving the subsequent one year compulsory posting in a recognised public or private sector institution.
Assistant Medical Officer	This category was known formerly as “Medical Assistant “. It includes individuals who have successfully completed the basic education programme for Assistant Medical Officers and have been placed on the Register of Assistant Medical Officers.
Dental Nurse	Individuals who have successfully completed the basic education programme for dental Nurses. Currently all of them are employed only in the public sector. When they are being converted to Dental Therapists, and then will be eligible to be placed on the Dental Register.

Food analysts	Food Analysts are persons who conduct food analysis in the public and private sector. They hold a degree in food science or Food Technology or Food Science And Technology from any institution of higher education or any other degree in science in any related field. These individuals are eligible to be placed on the Food Analysts Register.
Optometrist	Optometrists are persons who are registered with Malaysian Optical Council (MOC) and have obtained a degree in optometry. They are qualified to perform comprehensive eye examinations including prescribing, dispensing and selling spectacles and contact lenses. They also give advice regarding visual problems and detect eye problems, even chronic ophthalmic conditions before referring to medical practitioner.
Optician	Optician are registered with Malaysian Optical Council (MOC). They hold a diploma or certificate in optometry or optic with one year experiences (Optical Act 1992). In order to qualify they have to perform eye examination including prescribing, dispensing and selling spectacles. An Optician who has 3 years of experience or passes the contact lens examination is allowed to prescribe and dispense contact lenses.
Health Informatics Centre (HIC)	The HIC in the federal Ministry of Health is responsible for collecting and compiling health information from all the Programme Divisions in the Ministry of Health, the Department of Statistics and private healthcare providers. Prior to 2008, it was known as the Information and Documentation System Unit (IDS). The HIC is the official source of data from the MOH.
Health Facts	An annual publication produced by IDS and subsequently by HIC. It provides concise information on key health indicators. Reports for the period 2000 – 2012 are available on line.
Monitoring Indicators for Health for All	An annual publication produced by IDS. It provides concise information on health indicators required for reporting on progress towards Health for All. Reports for the period 2003 – 2012 are available on line.
Malaysian Medical Council	This is a statutory body formed under the Medical Act 1971. It has members from the public and private sectors, is chaired by the Director General of Health and the secretariat is in the Medical Practice Division of the Ministry of Health. It maintains a computerised register of medical practitioners.
Malaysian Dental Council	This is a statutory body formed under the Dental Act. It has members from the public and private sectors, is chaired by the Director General of Health and the secretariat is in the Oral Health Regulation & Practice Division of the Ministry of Health. It maintains a computerised register of Dental Practitioners.
Pharmacy Board of Malaysia	This is a statutory body formed under the Registration Of Pharmacists Act 1951. It has members from the public and private sectors, is chaired by the Director General of Health and the secretariat is in the Pharmacy Practice & Development Division of the Ministry of Health. It maintains a computerised register of Pharmacists.
Nursing Board of Malaysia	This is a statutory body formed under the Nursing Act. It has members from the public and private sectors, is chaired by the Director General of Health and the secretariat is in the Nursing Division of the Ministry of Health. It maintains a computerised register of Registered Nurses, Community Nurses, and Midwifery trained personnel.

Allied Health Division	This is the Programme division in the Ministry of Health is responsible for collecting and compiling information on Allied Health Personnel serving in the MOH. HRH in the private sector are encouraged to provide information to the Allied Health Division on a voluntary basis.
Malaysian Qualifications Agency	An agency established under an Act of Parliament and situated in the Ministry of Higher Education. It maintains data on higher education institutions, HRH education programmes, students and graduates in the public and private sectors (excluding those in the MOH).
Malaysian Optical Council	This is a statutory body formed under the Optical Act 1991. It has members from the public and private sectors, and is chaired by the Director General of Health. It maintains a computerised register of optometrists and opticians in the country and issues them annual practicing licenses.
Malaysian Food Analysts Council	Malaysian Food Analysts Council is a statutory body formed under the Food Analysts Act 2011. It has members from the public and private sectors, and is chaired by Director General of Health. It registers the food analysts and regulate the practice.

*Source: Respective Divisions of the Ministry of Health, Councils and Boards*

## ANNEX 4. DATA AVAILABILITY AND QUALITY

**Table 60:** Sources of HRH Data and Scope of Data From Each Source

Source	Scope	Data that is compiled & routinely available
Human Resource Management Information system (HRMIS)	<b>Public sector Federal and State</b> levels, including MOH and state health departments	Service records: <ul style="list-style-type: none"> <li>• postings &amp; promotions,</li> <li>• wages</li> <li>• leave,</li> <li>• disciplinary action</li> </ul>
HR Division, MOH	<b>Ministry of Health employees</b>	<ul style="list-style-type: none"> <li>• Posts for each category of staff</li> <li>• New employees, retirement, vacancies</li> <li>• Postings (i.e. state &amp; hospital distribution)</li> <li>• Age and gender</li> <li>• Promotions</li> <li>• Wages</li> <li>• Source of qualification for new entrants</li> </ul>
Health Informatics Centre	<ul style="list-style-type: none"> <li>• <b>Health status</b></li> <li>• <b>HR information</b> submitted by <ul style="list-style-type: none"> <li>• Statutory Boards</li> <li>• Program Divisions in MOH</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Numbers of staff (selected categories)</li> <li>• Public &amp; Private sector distribution (only for some categories)</li> </ul>
Statutory Boards (nationwide coverage)	<ul style="list-style-type: none"> <li>• Medical</li> <li>• Dental</li> <li>• Pharmacy</li> <li>• Nursing (including midwifery)</li> <li>• Assistant Medical Officers</li> <li>• Opticians &amp; optometrists</li> <li>• Food analysts;</li> <li>• Counsellors</li> </ul>	<ul style="list-style-type: none"> <li>• Numbers</li> <li>• Public and Private sectors</li> </ul> (Data on age, gender, location of practice is not extracted or compiled) <ul style="list-style-type: none"> <li>• Accredited training programs</li> <li>• Disciplinary action on registered practitioners</li> <li>• Intake and output of MOH training institutions</li> </ul>
National Specialist Register (aims to become nationwide coverage)	Accredited Medical and Dental specialist practitioners	Register is of recent origin, and currently data is incomplete
Clinical research centre, MOH	National Healthcare Establishment and Workforce Surveys	<ul style="list-style-type: none"> <li>• Public and private sector hospitals</li> <li>• Clinical and laboratory staff in the hospitals</li> <li>• Age and gender</li> <li>• Specialty groups</li> <li>• Work output (selected indicators)</li> </ul>
Ministry of Education Ministry of Defence (MOD)	Public Sector Universities MOD hospitals & clinics	

**Table 61:** Summary of Data Discrepancies and Key Data That is Not Available for HRH Planning

Data discrepancies	
Intra-MOH (Ministry of Health) <ul style="list-style-type: none"> <li>• HR Division</li> <li>• Program Divisions</li> <li>• Statutory Boards</li> <li>• Health Informatics Centre</li> </ul>	<ul style="list-style-type: none"> <li>• Differing definitions of some categories: <i>(example: Doctors in managerial positions at federal and state level do not apply for Annual Practising Certificate – hence are not counted in Statutory Boards but are included in HR division)</i></li> <li>• Differing numbers: collection or clerical errors</li> <li>• Data not routinely analysed. (example: age, gender, location of practice)</li> <li>• Private sector information is missing or incomplete <i>(Example: incomplete registration and enforcement - limited capacity of Statutory Boards;</i></li> <li>• Data on private sector clinic staff is collected but not compiled or reported</li> </ul>
	<b>Data that is collected but not analysed or reported</b>
Other public sector agencies (Ministry of Education, MQA, Ministry of Defence)	Data that is not routinely reported HRH in <ul style="list-style-type: none"> <li>• Universities (including hospitals &amp; clinics)</li> <li>• MINDEF hospitals</li> <li>• Other public sector agencies</li> </ul>
Private sector	Data that is collected but not compiled or reported <ul style="list-style-type: none"> <li>• HRH in private hospitals and free-standing clinics &amp; pharmacies is routinely collected by statutory boards</li> </ul> (Currently analysis is dependent on periodic surveys, limited to hospitals)
Education of HRH <ul style="list-style-type: none"> <li>• Ministry of Education</li> <li>• MQA</li> <li>• Statutory Boards</li> <li>• Public services department</li> </ul>	Data is collected but not compiled or reported include <ul style="list-style-type: none"> <li>• training institutions (number, type)</li> <li>• annual intake and output of each institution</li> <li>• numbers sponsored by government for basic training in overseas countries</li> </ul>
<b>Data that is NOT collected</b>	
<ul style="list-style-type: none"> <li>• Attrition between graduation and entry into HRH workforce</li> </ul>	
<ul style="list-style-type: none"> <li>• Under-employment and unemployment of trained HRH</li> </ul>	
<ul style="list-style-type: none"> <li>• Emigration (out-migration) of Malaysian HRH professionals</li> </ul>	





