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Ministry of Health Malaysia

HUMAN RESOURCES FOR HEALTH (HRH) COUNTRY PROFILES 2019-2021 MALAYSIA

PLANNING DIVISION MINISTRY OF HEALTH

HUMAN RESOURCES FOR HEALTH (HRH)

COUNTRY PROFILES 2019-2021 MALAYSIA

PLANNING DIVISION MINISTRY OF HEALTH
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LIST OF ABBREVIATIONS

AMO	Assistant Medical Officer
A&E	Accident and Emergency
AIMST	Asian Institute of Medicine, Science and Technology
AN	Assistant Nurse
CRC	Clinical Research Centre
CN	Clinical Nurse
CN	Community Nurse
FANZCA	Fellowship of the Australian and New Zealand College of Anaesthetists
FRCR	Fellowship of the Royal College of Surgeons
FRCS	Fellowship of the Royal College of Surgeons
HIC	Health Informatics Centre
HRMIS	Human Resource Management Information System
ICT	Information Communication Technology
IT	Information Technology
IHM	Institute of Health Management
IIUM	International Islamic University of Malaysia
GDP	Gross Domestic Product
GHO	Global Health Observatory
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	Universiti Kebangsaan Malaysia
UM	Universiti Malaya
UNIMAS	Universiti Malaysia Sarawak
USM	Universiti Sains Malaysia

UiTM	Universiti Teknologi MARA
OECD	Organisation for Economic Co-Operation and Development
O&G	Obstetrics and Gynaecology
T&CM	Traditional and Complementary Medicine
WHO	World Health Organisation
WPRO	Western Pacific Regional Office

EXECUTIVE SUMMARY

The years 2019 to 2021 have left a significant mark in history due to the emergence of COVID-19. The ensuing pandemic tested the capabilities of our healthcare system in multiple aspects, leading to global and national economic downturns and various other dire consequences. This report intends to provide reviews and analyses of the human resource for health faced by the country between 2019 to 2022. Also, to note there are several key points that may have been influenced by the gravity of the pandemic on the healthcare system.

The COVID-19 pandemic has widened the gaps in the healthcare system. Through these challenges, the healthcare system requires a holistic approach that includes consolidating resources and redesigning healthcare services through public and private collaboration and partnerships, as well as the involvement of the non-governmental organisations (NGO).

All five professions, namely doctors, dental practitioner, pharmacists, nurses, and AMOs (Assistant Medical Officers) have shown improvements over the years. In 2021, Malaysia had 23.8 doctors per 10,000 population, with a ratio of 1 to 420 population. However, in comparison with the average OECD countries and other upper-middle-income countries, Malaysia is still at the lower end of the statistics. Further comparisons of other cadres in healthcare can be observed in Chapter 2, where comparisons are illustrated through charts and tables.

In recent years, the nation saw a rapid expansion in new graduates entering the workforce, despite limited posts available. In December 2016, the government introduced an initiative to appoint graduates for service in government facilities on a contractual basis. The Public Service Department introduced a contract scheme for House Officers, New Dental Officers, and Provisionally Registered Pharmacists (PRP), where new graduates are enrolled on a contract basis instead of permanent employment. The change of policy would allow MOH (Ministry of Health) to recruit new doctors, dental practitioner, and pharmacists for provisional training and compulsory service without the constraint of limited permanent posts.

Lastly, the HRH Country Profile for Malaysia provides information reflecting the HRH situation mainly from 2019 to 2021, depending on data availability. This report also serves to improve future HRH policy development and planning, aiming for better coordination and recommendations on measures involving HRH supply and demand in the country.

PREFACE

The "Human Resources for Health Country Profile 2019–2021" report, published in 2023, represents a continuous effort by MOH (Ministry of Health) to compile all the achievements and progress related to Health Human Resources information over the years. It serves as essential information, providing an overview of human resources for health in the country and highlighting key strengths concerning various parameters, particularly demography, geographical, and sectoral distribution.

In the 12th Malaysia Plan, several new priorities, strategies, and emphases for 2021–2025 are outlined by the Economic Planning Unit (2021). Some of these strategies have implications for human resources for health (HRH), including the development of a Master Plan in Health Resources that aligns the supply and demand of the population.

The years 2019 to 2021 saw a tremendous shift in focus on healthcare objectives, as the COVID-19 pandemic became a major global catastrophic event. This unprecedented situation and its influence have, to some extent, brought this country towards challenging consequences in its healthcare system. Bearing that in mind, the authors intend to present a series of data and analyses, along with comparisons to past years' statistics and international benchmarking.

The previous reports were published in 2020, 2016, and 2014 and presented data mainly from 2011 onwards. Some data, especially in the annex, is from 2002.

Structure of this report

Each chapter starts with a brief overview of the situations, analysis, and presentation of HRH under all the parameters. However, the data source is limited to only the Ministry jurisdictions, including all the governing bodies and councils related to all the national healthcare organizations. The annexes provide annual data up to the latest year for which data is available, as well as a list of legislation governing HRH.

Data Source

This report contains sources from primary data which includes:

- Statutory Councils or Boards under various laws licensed seven (7) health professions, which include Medical, Dental, Pharmacy, Nursing and midwifery, Assistant Medical Officers, Optical and Food Analysts. Licensing covers both the public and private sectors. Additionally, although allied health professionals and Traditional and Complementary Medicine practitioners are not required by law to register themselves with their respective boards, they are encouraged to register voluntarily, and data on those who have registered themselves are included in this report.
- Human Resources Division of the MOH maintains data on all MOH's employees.
- Programme Divisions in the MOH maintain their records of HRH employed by the MOH and placed in their respective Programmes. They use such data for purposes of deployment, training and credentialing.

Limitations in data analysis and utilisation

Data is collected from individual governing agencies and departments, but discrepancies are likely due to the lack of cross-linking between data from different ministries and agencies. Moreover, data storage and distribution methods are mostly manual, contributing to potential inconsistencies.

The Human Resources Management Information System (HRMIS) serves as the primary system for recording civil servants' personnel data. To quantify healthcare personnel based on facilities, the Ministry of Health (MOH) relies on diverse data sources, such as HRMIS, manually maintained data within MOH, and monthly compiled data from all State Health Departments.

Due to the limitations mentioned above, suboptimal data quality and management may result in imprecise and inaccurate data collection, particularly concerning age, gender, sectoral, and geographical distribution.

1. INTRODUCTION

Malaysia is a Southeast Asian country, geographically comprised of 2 land masses separated by water – The western Malaysia peninsular, and the northern region of Borneo, and the islands in between and surrounding the landmasses. Located in the equatorial region, Malaysia's climate is generally hot and humid all year round. The land area comprises 329,847km2, with 99.63% of it is land area and the remaining being water area. Malaysia is the 66th largest country in the world, sharing both land and maritime borders with several countries including Thailand, Indonesia, Brunei and Philippines.

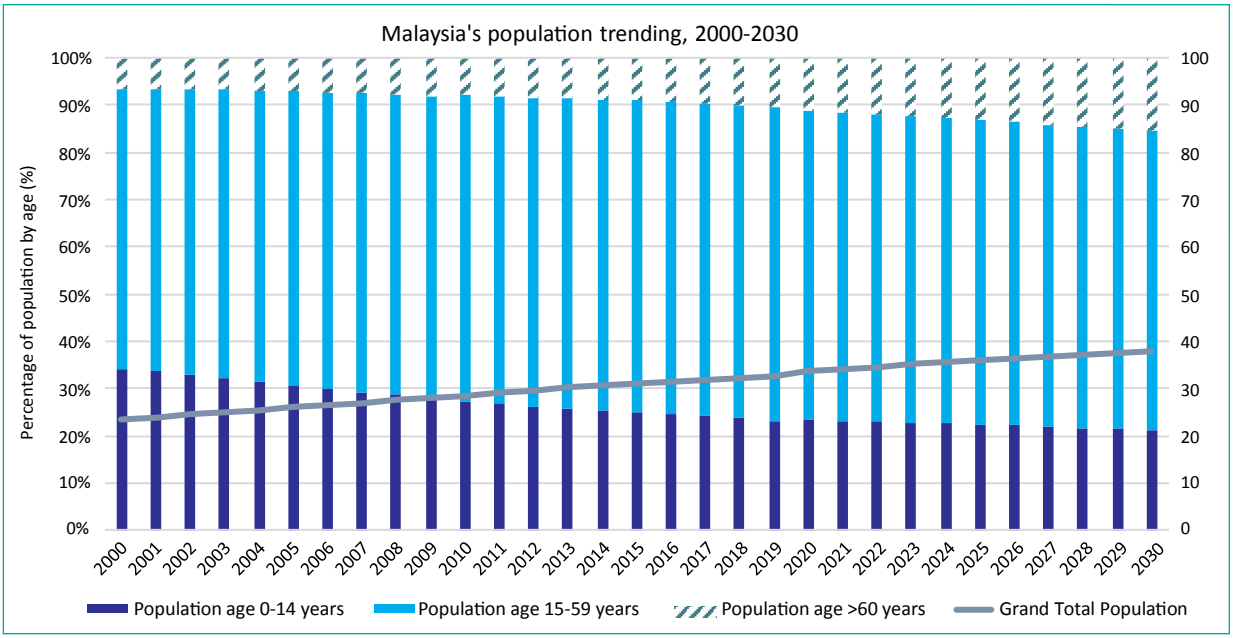
Malaysia is geographically divided into four (4) main regions, which are the West Coast, East Coast, Sabah and Sarawak. The West Coast consists of ten states, which are Johor, Negeri Sembilan, Melaka, Selangor, Perak, Penang, Kedah, Perlis, Federal Territory of Kuala Lumpur, and Federal Territory of Putrajaya. While the East Coast comprises of Kelantan, Terengganu, and Pahang. The states across the South China Sea, namely Sabah, including the Federal Territory of Labuan, and Sarawak, stand as a region of their own because of the vast border of its land.

As of the year 2022, Malaysia is a home nation of 32.7 million, made up of various ethnicities and religions. As of data collected in 2020, Malaysia is the 42nd most populated country in the world, with an average of 96 people per km^2 (World Bank, 2023). *Bumiputera* composition stands at 69.8 per cent, and the Chinese population composition sits in second place at 22.4%. In comparison, Indians and others remain at 6.8 per cent and 1.0 per cent (Department of Statistic, 2020), respectively.

1.1 DEMOGRAPHY

Figure 1 shows the trend of Malaysian population by age group from 2000 to 2030.

Figure 1: Malaysia's Population Trend, 2000–2030



Source: Department of Statistics Malaysia (2016)

As shown in Figure 1, Malaysia's population is projected to reach 40 million by 2030. Based on the trend, the percentage of the population aged 60 and above will double up to almost 15% of the total population, and it is observed that there will be a gradual decrease in the population for those aged 0 to 14 by 2030. The forecast anticipates a steady increase in population growth until 2030, driven by the continuous rise in the number of ageing populations.

1.2 ECONOMIC PROFILE

Malaysia is a relatively open state-oriented, and newly industrialised market economy. It is ranked as the world's 34th-largest economy by nominal GDP and the 31st-largest by Purchasing Power Parity (PPP).

Malaysia developed strong economic growth in the past three decades and achieved a consistent positive growth in Gross Domestic Product (GDP) until 2019. However, in the year 2021, the country's GDP grew to 3.1% as compared to previous year -5.5%. The performance was driven by the services and manufacturing sector, which constituted 81.3% of total GDP (Economic Planning Unit 2022).

Based on overall performance in 2021, the large service sector contributed about 57% of the total GDP, the industrial sector 34.7%, and the small agricultural sector 6.7%. Malaysia's unemployment rate is 4.6% as of 2021. It has a labour force of about 15 million, the world's 34th-largest. (Economic Planning Unit, 2022).

1.3 HEALTH EXPENDITURE

For 2019 and 2020, the total health expenditure in Malaysia stands at 4.2% and 4.7% of GDP, equivalent to MYR 1,960 and MYR 2,057 on per capita expenditure on health in 2019 and 2020, respectively (Economic Planning Unit, 2022). This represents an increment in total health expenditure (both in the form of a percentage of GDP and per capita expenditure) that is proportional to the increase in population size.

1.4 HEALTH STATUS

Malaysia has experienced progressive economic development and prosperity since its independence in 1957. As the nation grow to become one of the economic powerhouses in South East Asia, the growth in the economic sector contributed to the increase GDP every year. As a result, the nation saw many significant and rapid development, among which the health sector is one of the benefactors, as evident by the increasing health expenditure and improvement in many key health indicators that reflects the health status of the nation.

As Malaysia is gearing toward a high-income nation, it is in need of steps for engineering and improvising its healthcare system to be relevant to the needs for domestic and global healthcare. Table 1 shows Key Indicators of Health Status in Malaysia from 2013 to 2021.

Table 1: Key Indicators of Health Status

Key Indicators of Health Status	YEARS								
	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total Expenditure on Health	44,976	49,193	49,838	52,018	56,114	60,445	64241	67022	nil
Life Expectancy at Birth (in years) (Male)	72.4	72.4	72.5	72.1	72.1	72.3	72.5	72.5	72.3
Life Expectancy at Birth (in years) (Female)	77.1	77	77.1	77.2	77.1	77.2	77.4	77.2	77
Life Expectancy at Birth (in years) (Total)	74.6	74.5	74.6	74.7	74.4	74.6	74.8	74.7	74.5
Infant Mortality Rate (death per 1000 live births)	6.3	6.7	6.9	6.7	6.9	7.2	6.6	5.7	6.1
Under 5 Mortality Rate (death per 1000 live births)	7.9	8.3	8.4	8.1	8.4	8.8	8.1	7	7.4
Maternal Mortality Ratio (death per 100,000 live births)	21.4	22.3	23.8	29.1	25	23.5	21	24.8	68.2

Source: Life Expectancy at Birth, Infant Mortality Rate, Under 5 Mortality Rate and Maternal Mortality Ratio data from Ministry of Health (2013-2019); except 2018 Infant Mortality Rate, 2018 Under 5 Mortality Rate and 2018 Maternal Mortality Ratio data from Department of Statistics Malaysia (2019). Total Expenditure on Health data from MNHA (2019)

According to the report published by the Institute of Public Health (2017), the Disability-Adjusted Life Years (DALYs), which represents the total burden of diseases and injuries affecting Malaysians from 2009 to 2014, was initially led by road traffic injuries (2009–2011), but this is subsequently replaced by ischaemic heart disease (2012–2014). Ischaemic heart disease contributed to the highest overall DALY for six years, followed by road traffic injuries and cerebrovascular diseases (Table 2).

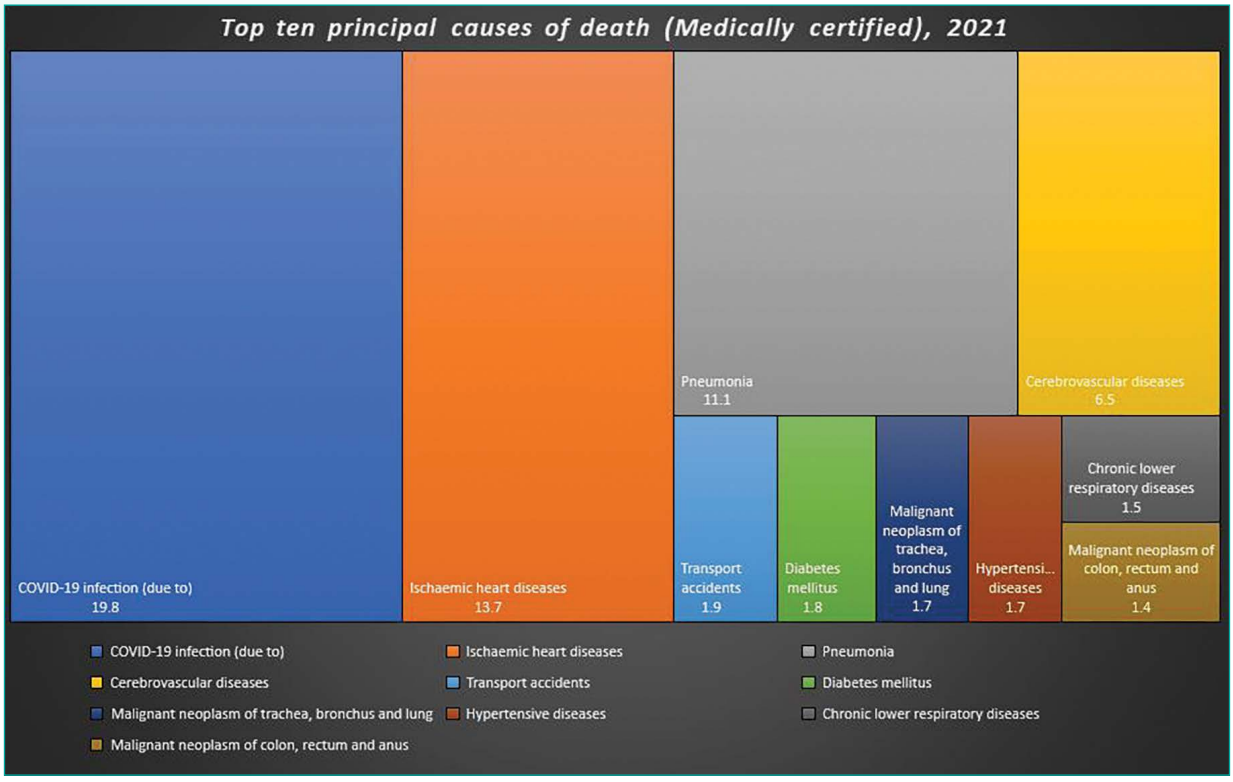
It is shown that non-communicable disease is the leading health problem among the Malaysian population. However, it is equally alarming that road traffic injuries persistently appear as the second leading cause of DALYs and remained in this position from 2009 to 2014. Refer to Table 2.

Table 2: Malaysia's Overall Leading Causes of Total Burden (DALYs), 2021

Rank	Top ten principal causes of death (Medically certified), 2021	No.	%
1.	COVID-19 infection (due to)	31,063	19.8
2.	Ischaemic heart diseases	21,485	13.7
3.	Pneumonia	17,503	11.1
4.	Cerebrovascular diseases	10,181	6.5
5.	Transport accidents	3,062	1.9
6.	Diabetes mellitus	2,792	1.8
7.	Malignant neoplasm of trachea, bronchus and lung	2,679	1.7
8.	Hypertensive diseases	2,642	1.7
9.	Chronic lower respiratory diseases	2,337	1.5
10.	Malignant neoplasm of colon, rectum and anus	2,212	1.4
All causes		**157,251**	

Source: Department of Statistic (2022)

Figure 2: Malaysia's Overall Leading Causes of Total Burden (DALYs), 2021



Source: Department of Statistic, DOSM (2022)

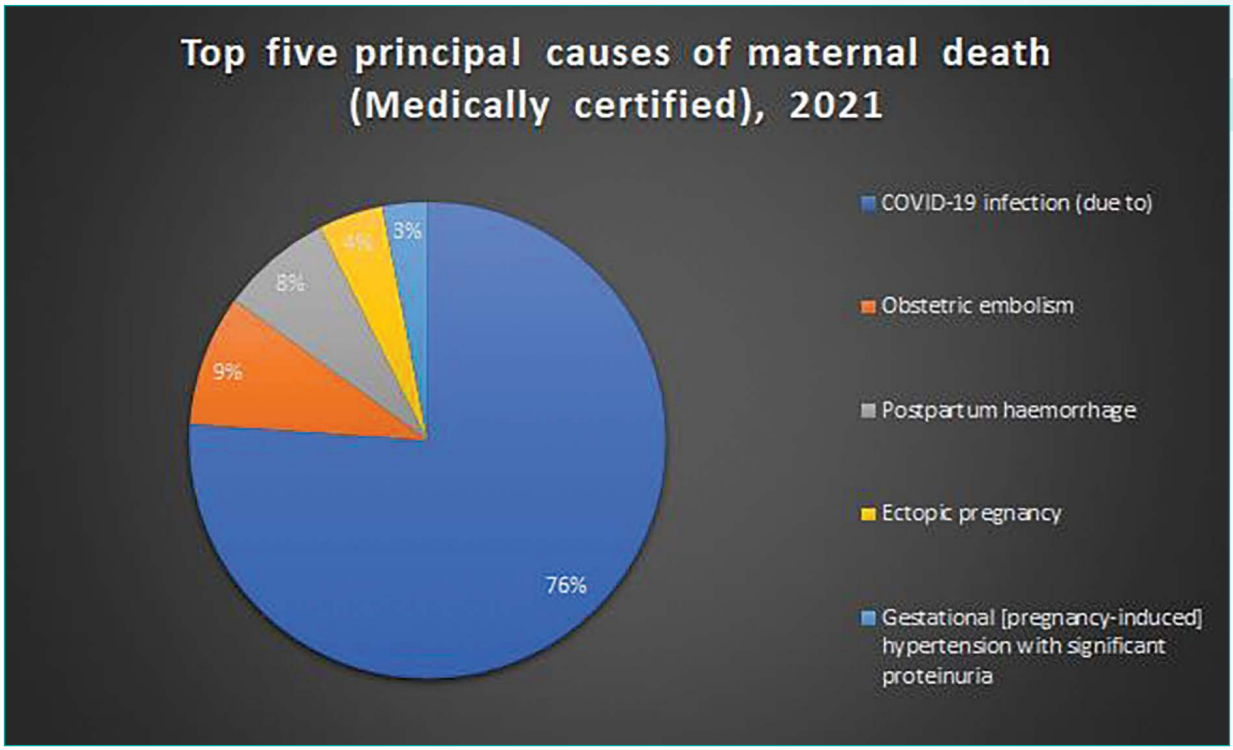
By referring to Figure 2, the number of deaths in 2021 increased 34.5 per cent from 166,970 deaths in 2020 due to excess death during the COVID-19 pandemic. Medically certified deaths improved to 70.0 per cent (157,251) of 224,569 deaths, while 30.0 per cent (67,318) were non-medically certified deaths. COVID-19 infection is the principal cause of death in Malaysia which recorded 31,063 deaths, which makes up 19.8 per cent of the 157,251 medically certified deaths in 2021. Ischaemic heart diseases were the second highest cause of death with 13.7 per cent, followed by pneumonia (11.1%), cerebrovascular diseases (6.5%) and transport accidents (1.9%).

Table 3: Five principal causes of maternal death (medically certified) Malaysia, 2021

	Top five principal causes of maternal death (Medically certified)	No.	%
1.	COVID-19 infection (due to)	172	57.3
2.	Obstetric embolism	20	6.7
3.	Postpartum haemorrhage	17	5.7
4.	Ectopic pregnancy	10	3.3
5.	Gestational [pregnancy-induced] hypertension with significant proteinuria	7	2.3
	Total of all causes	300	

Source: Department of Statistic (2022)

Figure 3: Five principal causes of maternal death (medically certified) Malaysia, 2021



Source: Department of Statistic (2022)

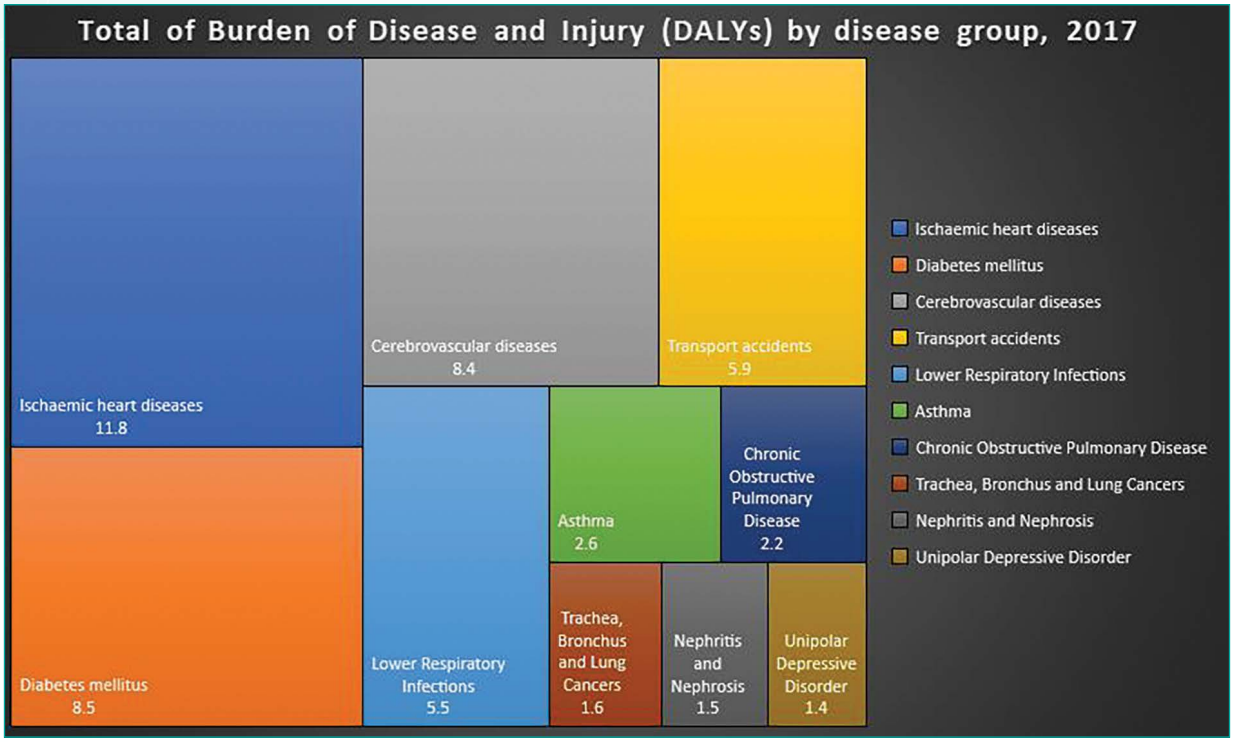
Table 3 further elaborates on the causes of the maternal mortality ratio, and based on the statistics; it confirms the hypothesis that Covid-19 infection is a major cause of maternal mortalities in Malaysia. Covid-19 infection mortality in pregnant mothers was reported at 57.3%, making it the highest among all the principal causes of maternal mortality.

Table 4: Total of burden of disease and injury (DALYs) by disease groups, 2017

Rank	Total of Burden of Disease and Injury (DALYs) by disease group	No.	%
1.	Ischaemic heart diseases	688,594	11.8
2.	Diabetes mellitus	494,573	8.5
3.	Cerebrovascular diseases	491,910	8.4
4.	Transport accidents	344,312	5.9
5.	Lower Respiratory Infections	321,206	5.5
6.	Asthma	151,448	2.6
7.	Chronic Obstructive Pulmonary Disease	130,823	2.2
8.	Trachea, Bronchus and Lung Cancers	92,768	1.6
9.	Nephritis and Nephrosis	85,167	1.5
10.	Unipolar Depressive Disorder	83,926	1.4

Source: Institute of Public Health (2020)

Figure 4: Total of burden of disease and injury (DALYs) by disease groups, 2017



Source: Institute of Public Health (2020)

As shown in Figure 4, of 2017, ischemic heart disease remained the leading cause of total burden in Malaysia, contributing 11.8% of the total DALYs. It was followed by diabetes mellitus, with 8.5%, cerebrovascular diseases (8.4%), transport accidents (5.9%) and lower respiratory infections (5.5%).

1.5 THE MALAYSIAN HEALTHCARE SYSTEM

Malaysia's overall healthcare system comprises two highly developed sectors complementing each other in providing healthcare for various backgrounds in the populations. The backbone of the healthcare industry in Malaysia is a government-led and heavily subsidised public sector, in which the tax reserve primarily funds Malaysian's need for healthcare. While on the other side of the system, the private healthcare sector is an open market, where most insurance companies and financially able Malaysians form a crucial part of a thriving healthcare economy in Malaysia. The present relationship between these two sectors has stimulated tremendous growth and opportunities in the Malaysian healthcare market. Both sectors complement each other in forming a healthy economic cycle for all parts of Malaysian society.

The Malaysia Ministry of Health has always spearheaded the overall responsibility for the well-being of the healthcare ecosystem in the nation. Ensuring national healthcare at progressive standards, the Ministry has always committed to being at the forefront of national healthcare services by getting involved at all levels of governance, right from primary and tertiary healthcare services to formulating policies, legislation, and strategic planning. The Ministry, too, is very committed to working hand in hand with all governmental and non-governmental bodies and agencies in making national healthcare more inclusive and accessible for all Malaysians.

From the primary care perspective, the government has been committed to expanding healthcare coverage in rural areas by expanding various health programmes, both new and existing, to strengthen the connection between rural patients and mainstream healthcare. An initiative called Community Clinic is a government-based clinic system that offers free and minimum co-payment mechanisms for all citizens. The implementation of Peka B40 is another example of the execution of universal healthcare coverage in Malaysia, where free and accessible healthcare is provided for citizens who are above 60 years of age and are underprivileged.

In line with the administration's commitment to provide affordable and accessible healthcare for the citizens, it has been the utmost intent to eliminate all possible barriers to healthcare.

1.6 HEALTH FACILITIES IN MALAYSIA

The primary service provider in Malaysian healthcare is the public sector. However, the involvement of the private sector providers is significantly increasing year over year. (Table 5). Over time, the national demand for healthcare has been outpacing the supply significantly in every part of the healthcare industry. Thus, it makes the public and private health sector relationships seen frequently as complementing rather than competing with each other.

In essence, the expansion of the public and private healthcare industry in the country allows the beneficiary to have more options in healthcare, in line with the growing health awareness among the public.

Table 5 shows the trend of public healthcare facilities in Malaysia from 2011 to 2021.

Acknowledging that there are still areas that require healthcare coverage especially public healthcare facilities which can generally be seen to be expanded over the years continuously.

Under the private healthcare sector, there are eleven categories of different healthcare practices that the Ministry of Health licenses under the provisions provided in the Private Healthcare Facilities and Services Act 1998 (Act 586). Over the past decade, progressive expansion of the private healthcare sector can be seen, indicating the rise in demand for private healthcare from the population.

Based on Table 6, overall facilities under private healthcare show a growth rate of 30.2% over ten (10) years, compared to 6.5% for public healthcare facilities.

The rapid growth observed may be driven by several factors such as rising income levels, increasing ageing population, health awareness, health insurance penetration, the government's focus on providing universal healthcare coverage and the growing number of burdens of non-communicable diseases (NCDs).

Collectively, the expansion of the healthcare industry in the country is reflected in the increasing demands of the population. Table 7 indicates a growing trend in the size of healthcare facilities in Malaysia. However, despite the growth, an exception to the years 2020 and 2021, where we can see a significant drastic drop in the number of admissions and outpatients' attendances due to the movement control order, which significantly restricts public movement and suspends all activities, therefore lessens the number of patients (non-COVID 19 cases) in that year.

Table 5: Number of Public Healthcare Facilities (Hospitals and Clinics) in Malaysia (2011–2021)

Public Healthcare Facility	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Hospitals & Medical Institutions	138	140	141	142	143	144	144	144	144	146	146
Non-MOH Hospitals	8	7	8	8	9	9	10	10	10	10	12
Health Clinics* (KK, KP, KD, KKIA, K1M)	2,958	3,034	3,114	3,178	3,213	3,220	3,223	3,224	3171	3147	3147
Total Public Healthcare Facility	**3,104**	**3,181**	**3,263**	**3,328**	**3,365**	**3,373**	**3,377**	**3,378**	**3,325**	**3,303**	**3,305**

Source: Ministry of Health (2011–2022)

Table 6: Number of Private Healthcare Facilities in Malaysia (2011–2021)

Private Healthcare Facility	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Private Medical Clinic	6589	6675	6801	6978	7146	7335	7571	7718	7988	8222	8419
Private Hospital	220	209	192	184	183	187	200	210	208	202	209
Private Ambulatory Care Centre	46	49	54	66	63	73	100	117	128	142	153
Private Nursing Home	14	15	14	19	16	17	22	21	21	21	21
Private Maternity Home	25	23	16	16	14	16	16	18	18	17	17
Private Haemodialysis Centre	344	363	343	366	407	423	450	479	511	543	604
Private Blood Bank	5	5	5	4	3	4	4	5	5	5	5
Private Community Mental Health Centre	1	0	0	1	1	1	1	1	1	1	1
Private Hospice	4	4	4	3	3	2	2	2	3	3	9
Private Healthcare Premises Incorporating Any Two or More of the Facilities or Services	1	1	1	1	2	2	2	2	2	2	2
Total Private Healthcare Facility	**7249**	**7344**	**7430**	**7638**	**7838**	**8060**	**8368**	**8573**	**8885**	**9158**	**9440**

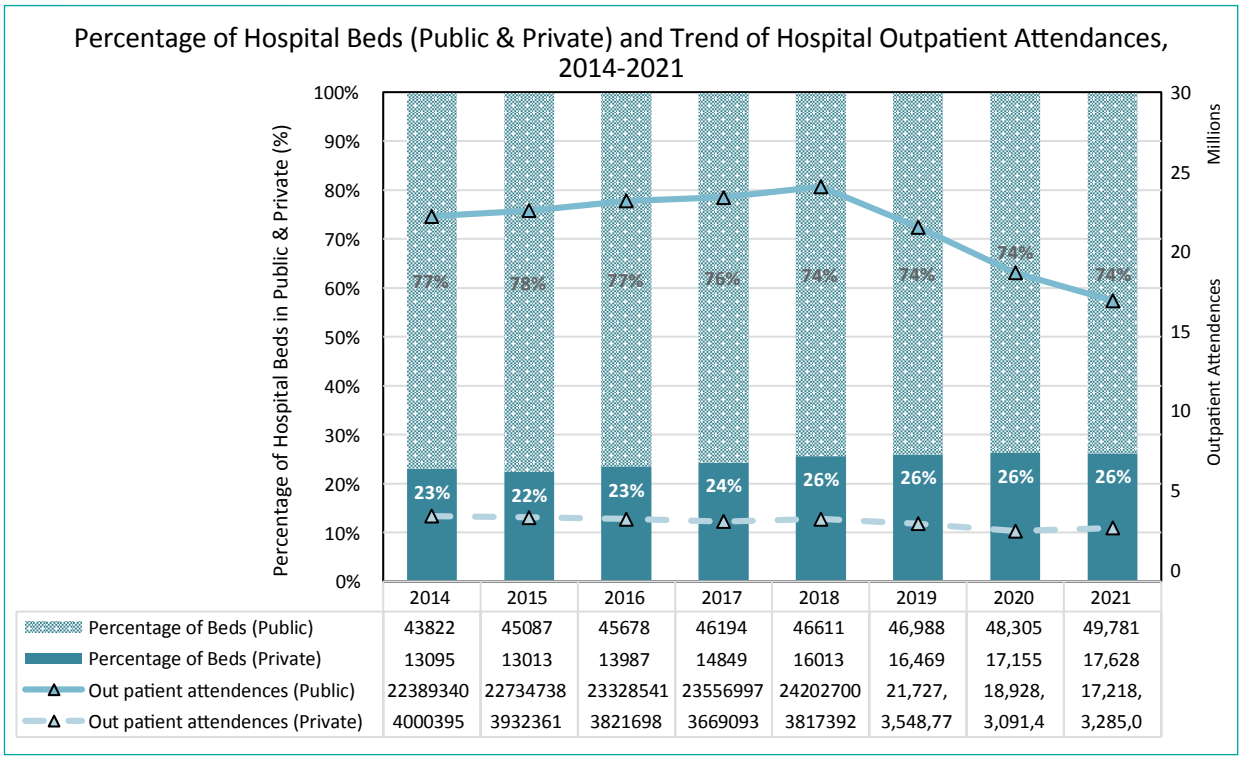
Source: Ministry of Health (2011–2022)

Table 7: Number of Hospitals, Beds, Hospital Outpatients Attendances and Admission in Public and Private Sector, 2014–2021

	2014	2015	2016	2017	2018	2019	2020	2021
No of Hospital (Public)	150	152	153	154	154	154	156	158
No of Hospital (Private)	184	183	187	200	210	208	202	209
No. of Beds (Public)	43,822	45,087	45,678	46,194	46,611	46,988	48,305	49,781
No. of Beds (Private)	13,095	13,013	13,987	14,849	16,013	16,469	17,155	17,628
Outpatient Attendances (Public)	22,389,340	22,734,738	23,328,541	23,556,997	24,202,700	21,727,843	18,928,814	17,218,077
Outpatient Attendances (Private)	4,000,395	3,932,361	3,821,698	3,669,093	3,817,392	3,548,778	3,091,487	3,285,071
Admission (Public)	2,613,612	2,677,037	2,731,579	2,539,708	2,791,939	2,904,405	2,585,763	2,512,777
Admission (Private)	1,083,201	1,064,718	1,073,039	1,045,592	1,099,045	1,170,558	916,694	774,197

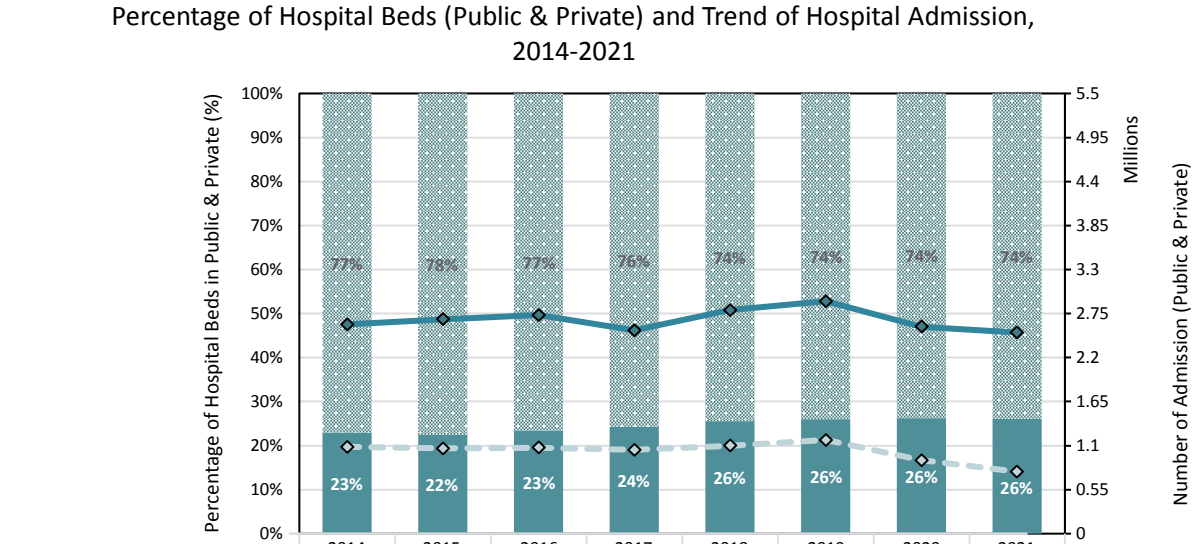
Source: Ministry of Health (2011–2022)

Figure 5: Percentage of Hospital Beds (Public & Private) and Trend of Hospital Outpatient Attendances, 2014–2021



Source: Ministry of Health (2015–2022)

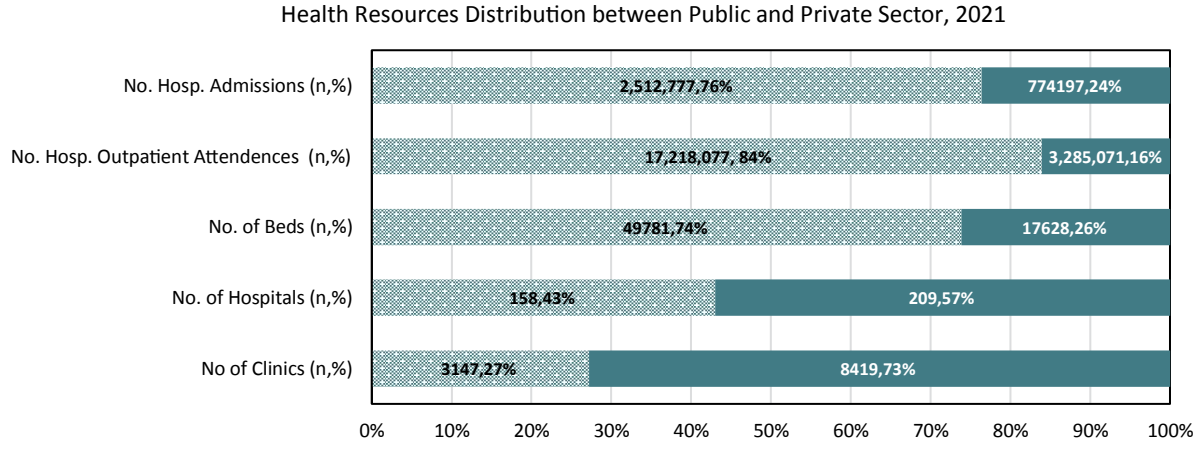
Figure 6: Percentage of Hospital Beds (Public & Private) and Trend of Hospital Admission, 2014–2021



	2014	2015	2016	2017	2018	2019	2020	2021
Percentageof Beds (Public)	43822	45087	45678	46194	46611	46,988	48,305	49,781
Percentage of Beds (Private)	13095	13013	13987	14849	16013	16,469	17,155	17,628
Admission (Public)	2613612	2677037	2731579	2539708	2791939	2,904,405	2,585,763	2,512,777
Admission (Private)	1083201	1064718	1073039	1045592	1,099,045	1,170,558	916,694	774,197

Source: Ministry of Health (2015–2022)

Figure 7: Number of Hospitals, Beds, Hospital Outpatients Attendances and Admission in Public and Private Sector, 2021



	No of Clinics (n,%)	No. of Hospitals (n,%)	No. of Beds (n,%)	No. Hosp. Outpatient Attendences (n,%)	No. Hosp. Admissions (n,%)
Public	27%	43%	74%	84%	76%
Private	73%	57%	26%	16%	24%

Source: Ministry of Health (2022)

In general, Figure 4 analysis can briefly explain the situations of the institutional burden faced by both the public and private healthcare sectors. The proportion of public clinics in Malaysia accounted for only 27%, as compared to a staggering difference in the number of clinics within the private sector, which make up more than 70% of the total clinics. Similarly, the number of hospitals in Malaysia, 57% of the total hospitals are operated by the private sector, whereas public hospitals constitute 43% only.

However, the total number of beds owned by the public hospital across Malaysia is significantly more than the private sector as they are the backbone of the national healthcare system. Most public facilities are built to accommodate a large number of patients and provide tertiary healthcare services, which is reflected again in Figure 4, where the number of admissions in public is significantly higher than in private hospitals. The same goes for the perspective of providing outpatient services, and the attendances are greater among public clinics than the private facility, although the number of private clinics is significantly more than the publics'.

2. HEALTH WORKFORCE SUPPLY AND TRENDS

2.1 HUMAN RESOURCES FOR HEALTH (HRH) SUPPLY

2.1.1 HRH SUPPLY

In the context of Malaysia aiming to be a high-income nation, the stock of HRH (Human Resources for Health) in Malaysia is compared with the Organisation for Economic Co-Operation and Development (OECD) countries using the OECD. Stat database, and WHO National Health Workforce Account (NHWA) Data Platform. Besides that, comparisons are also carried out with selected neighbouring countries, especially those in the Western Pacific Region (WPRO).

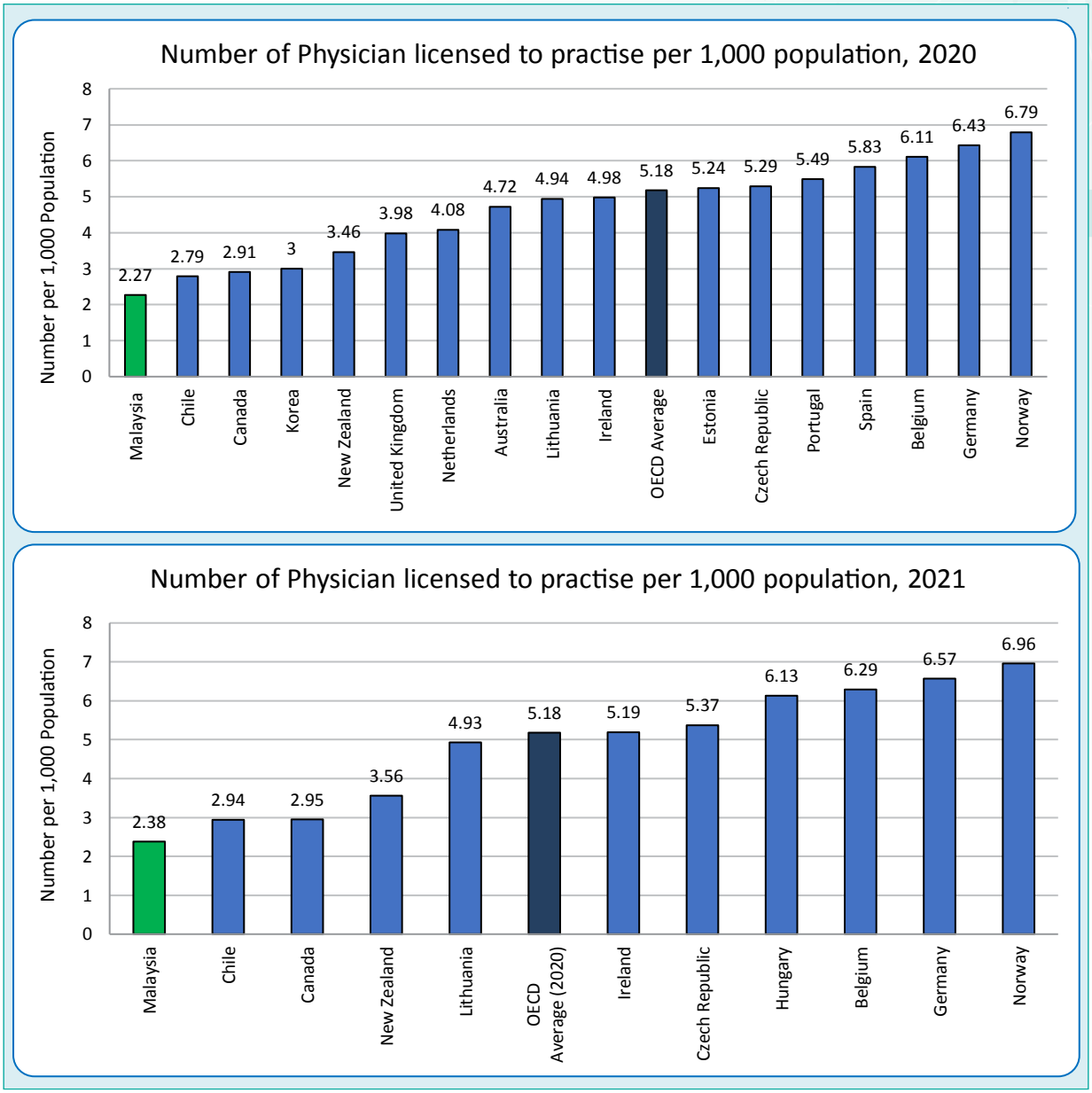
In any international comparative analysis with other countries, several crucial parameters such as age pattern, disease burden, financing mechanism, and healthcare system structure must be taken into consideration. However, this report mainly focuses on HRH data in relation to population density.

Figure 8 to Figure 12 shows the density of doctors, Dental Practitioner, pharmacists, nursing personnel, and physiotherapists per 1,000 population in comparison with OECD countries. In comparison, the density of our national healthcare workforce is still low when compared to the average OECD level.

In contrast, when comparing Malaysia with WPRO countries, it can be observed that Malaysia's healthcare workforce size falls relatively at the median. Figure 13 displays the density of doctors, Dental Practitioner, pharmacists, and nurses for selected WPRO countries.

In this report, Malaysian doctors are benchmarked with professionally active physicians from OECD data as the national healthcare data include practicing and other (non-practicing) physicians who are registered and entitled to practice as healthcare professionals. Therefore, this variable best matches our data that includes both practicing and non-practicing professionals.

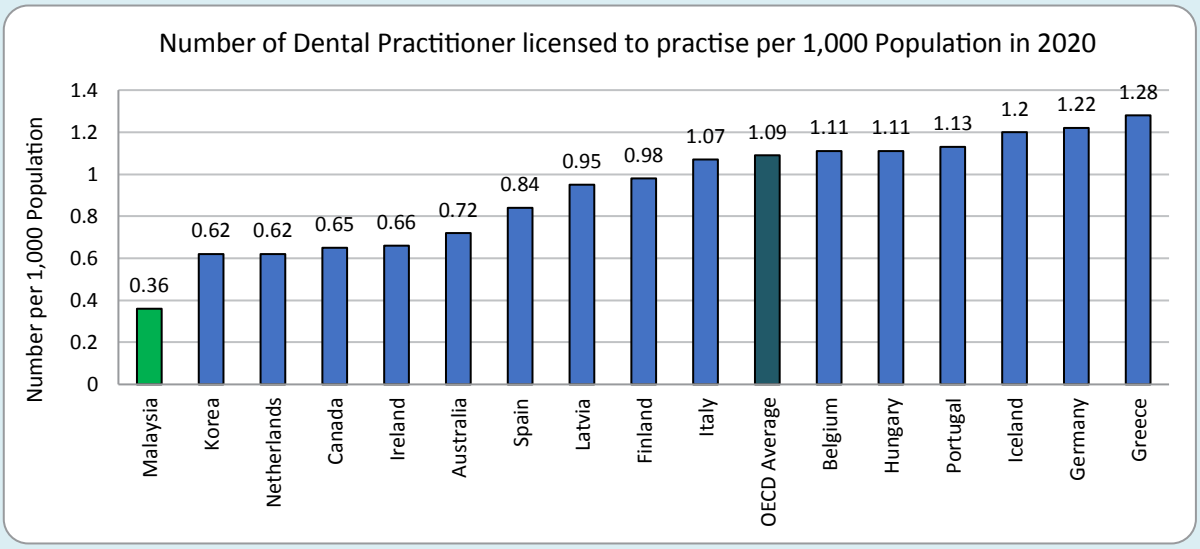
Figure 8: Number of Physicians licensed to practise per 1,000 Population in selected OECD countries in comparison to Malaysia, 2020 and 2021

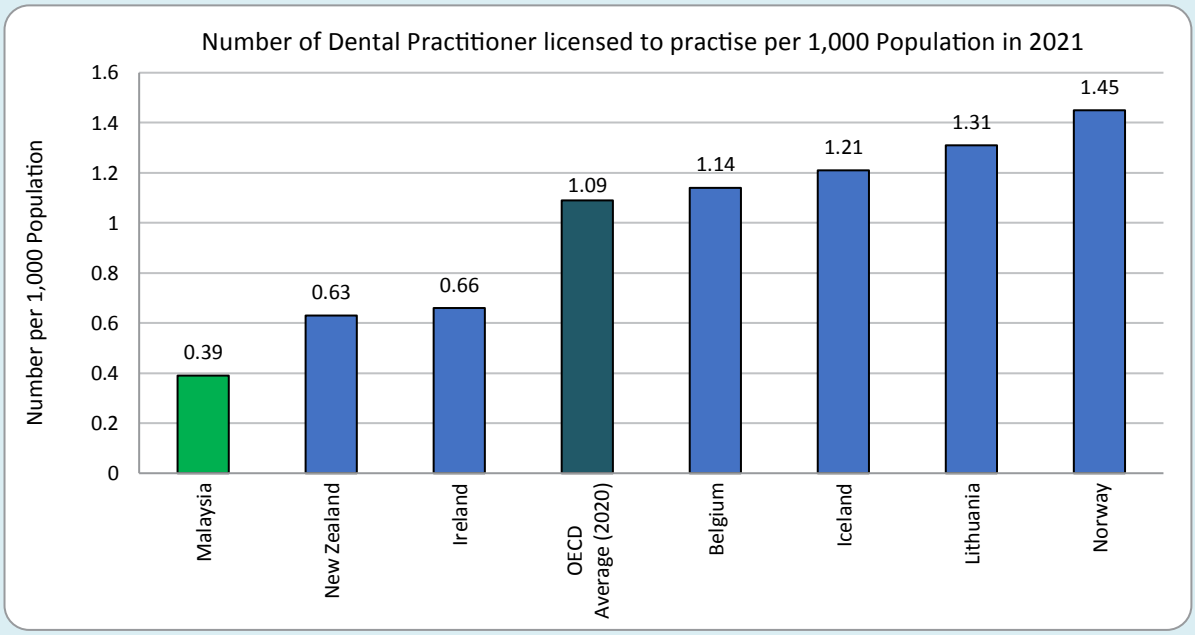


Source: Data for Malaysia data from Ministry of Health (2021); Organisation for Economic Co-operation and Development countries retrieved from https://stats.oecd.org/;

Note: a) OECD average was calculated from data available from OECD. Stat website up to 2 December 2022 as in Annex 1. b) In 2021, the composition of countries differs from that of 2020 because of lack in data availability during the data retrieval process from the website. Therefore, the average OECD data from 2020 is utilized in both charts.

Figure 9: Number of Dental Practitioner per 1,000 Population in Selected OECD countries in comparison to Malaysia, in 2020 and 2021

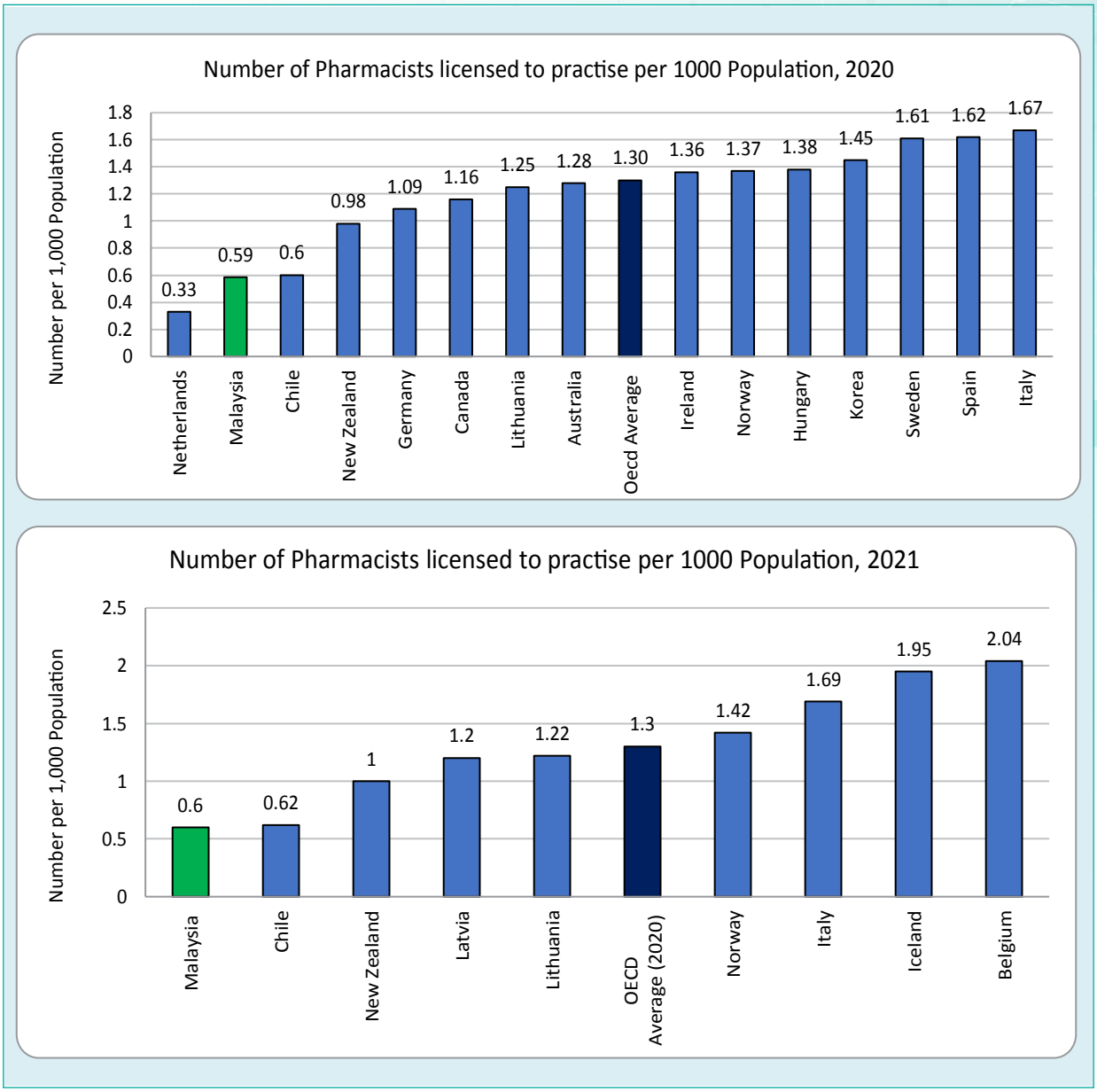




Source: Data for Malaysia from Ministry of Health (2021, 2022); Organisation for Economic Co-operation and Development countries retrieved from https://stats.oecd.org/;

Note: a) OECD average was calculated from data available from OECD. Stat website up to 2 December 2022 as in Annex 1. b) In 2021, the composition of countries differs from that of 2020 because of lack in data availability during the data retrieval process from the website. Therefore, the average OECD data from 2020 is utilized in both charts..

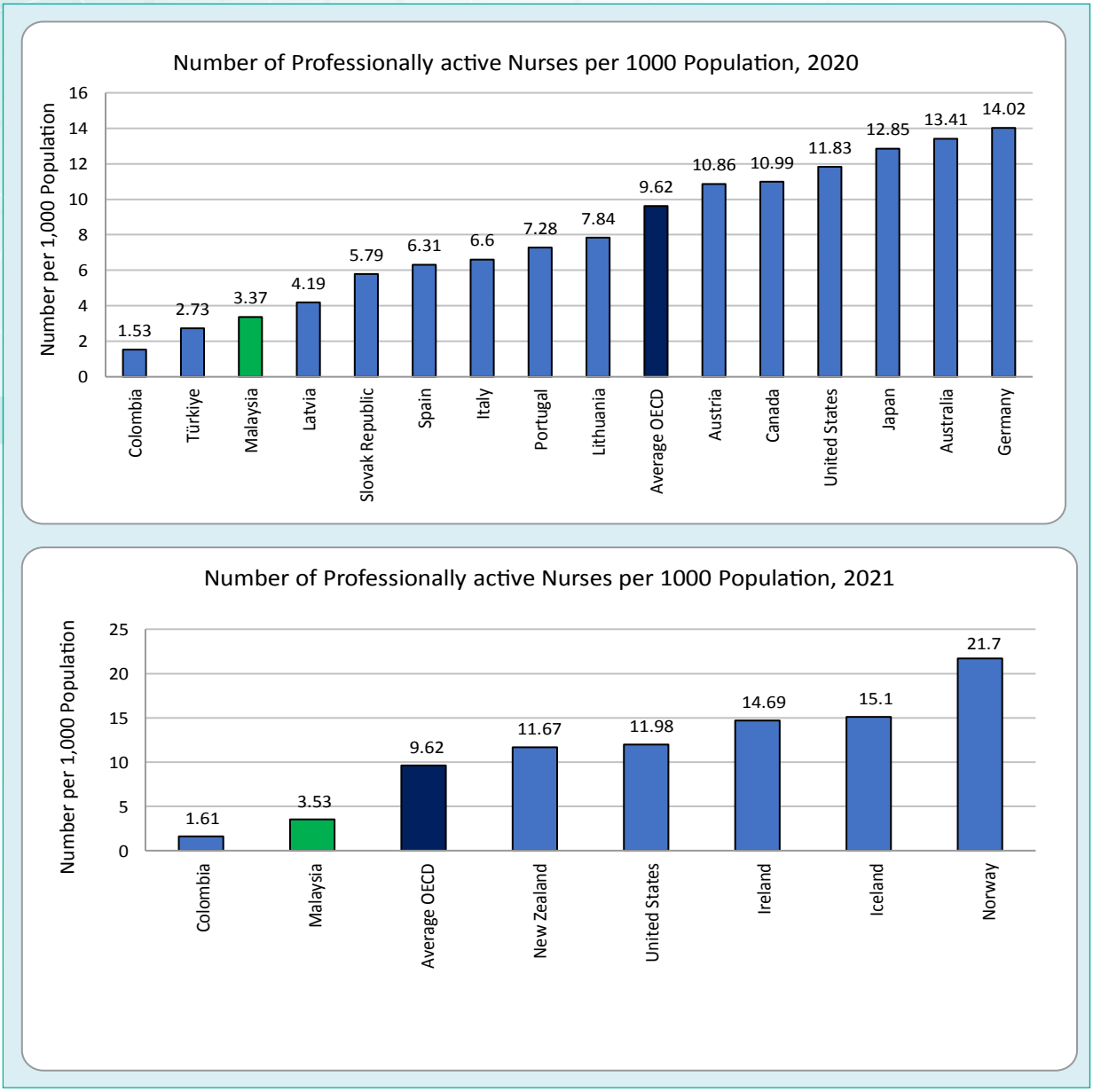
Figure 10: Number of Pharmacists per 1,000 Population in Selected OECD countries in comparison to Malaysia, in 2020 and 2021



Source: Data for Malaysia from Ministry of Health (2020,2021); Organisation for Economic Co-operation and Development countries retrieved from https://stats.oecd.org/;

Note: a) OECD average was calculated from data available from OECD. Stat website up to 2 December 2022 as in Annex 1. b) In 2021, the composition of countries differs from that of 2020 because of lack in data availability during the data retrieval process from the website. Therefore, the average OECD data from 2020 is utilized in both charts.

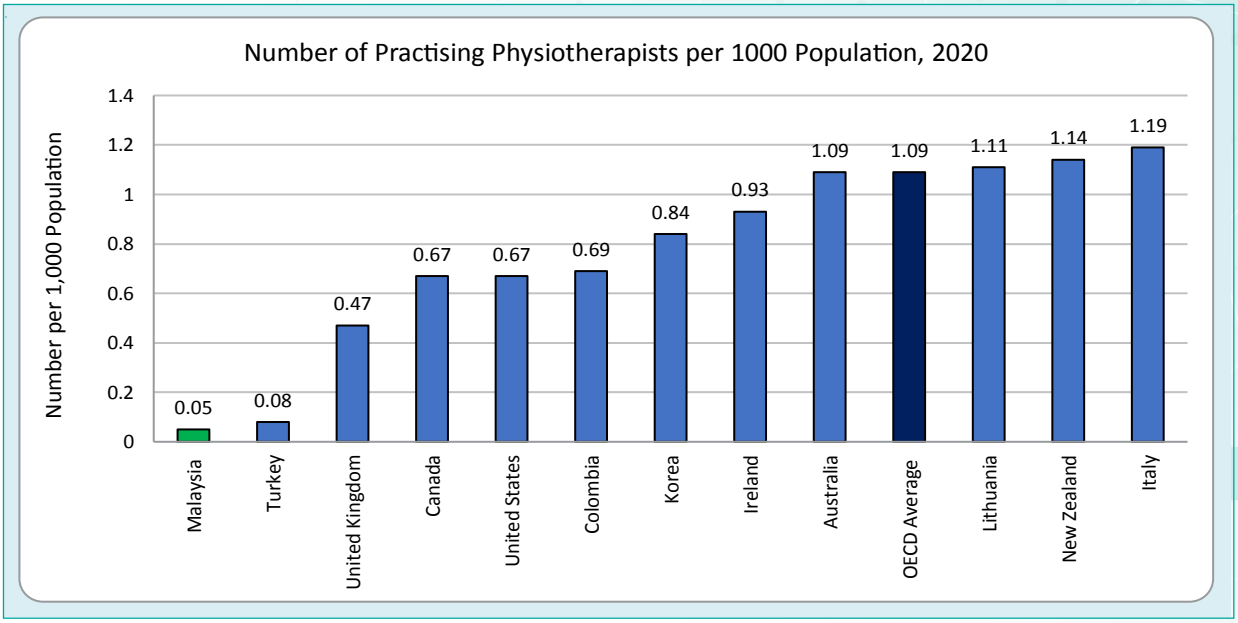
Figure 11: Number of Nurses per 1,000 Population in selected OECD countries in comparison to Malaysia, in 2020 and 2021



Source: Data for Malaysia from Ministry of Health (2019); Organisation for Economic Co-operation and Development countries retrieved from https://stats.oecd.org/;

Note: a) OECD average was calculated from data available from OECD. Stat website up to 2 December 2022 as in Annex 1. b) In 2021, the composition of countries differs from that of 2020 because of lack in data availability during the data retrieval process from the website. Therefore, the average OECD data from 2020 is utilized in both charts.

Figure 12: Number of Practising Physiotherapists in selected OECD countries per 1,000 Population, 2020



Source: Data for Malaysia from Ministry of Health (2019); Organisation for Economic Co-operation and Development countries retrieved from https://stats.oecd.org/;

Note: a) OECD average was calculated from data available from OECD. Stat website up to 2 December 2022 as in Annex 1.

Table 8: Density of Doctors per 10,000 population by World Bank Income Classification, 2020

High Income		Upper Middle Income		Lower Middle Income	
Country	**Density**	**Country**	**Density**	**Country**	**Density**
Austria	52.93	Argentina	40.6	Sri Lanka	12.29
Switzerland	43.8	Costa Rica	33	Philippines	7.73
Netherlands	40.79	Mauritius	27.13	Timor-Leste	7.56
Latvia	34.05	Colombia	23.27	India	7.35
United Kingdom	30.04	**Malaysia**	**22.66**	Bangladesh	6.67
Chile	28.35	Albania	18.75	Indonesia	6.23
Saudi Arabia	27.38	Guatemala	12.41	Bhutan	4.99
Kuwait	23.42	Maldives	12.04	Lao People's Democratic Republic	3.54
Oman	17.74	Iraq	9.66	Ghana	1.7

Source: Data retrieved from WHO NHWA Data Platform https://apps.who.int/nhwaportal/Home/Index.

Note: Data retrieved from the portal are updated up to January 2021

Table 9: Density of Dental Practitioner per 10,000 population by World Bank Income Classification, 2020

High Income		Upper Middle Income		Lower Middle Income	
Country	Density	Country	Density	Country	Density
Lithuania	14.03	Costa Rica	11.51	India	1.61
Chile	13.96	Colombia	10.53	Nepal	1.26
Belgium	11.00	Georgia	6.18	Indonesia	1.19
Poland	10.27	Republic of Moldova	4.10	Sri Lanka	1.07
Ireland	6.67	**Malaysia**	**3.55**	Bhutan	0.92
Austria	5.75	Iraq	3.48	Lao People's Democratic Republic	0.77
Saudi Arabia	5.64	Russian Federation	3.47	Bangladesh	0.69
United Kingdom	5.36	Guatemala	2.51	Eswatini	0.19
Oman	2.92	Maldives	0.94	Timor-Leste	0.02

Source: Data retrieved from WHO NHWA Data Platform https://apps.who.int/nhwaportal/Home/Index.

Note: Data retrieved from the portal on the 2nd December 2022, and portal information is updated up to January 2021

Table 10: Density of Pharmacists per 10,000 population by World Bank Income Classification, 2020

High Income		Upper Middle-Income		Lower Middle-Income	
Country	Density	Country	Density	Country	Density
Belgium	19.80	Costa Rica	11.95	India	8.70
Ireland	13.70	Maldives	6.51	Lao People's Democratic Republic	2.29
Lithuania	12.67	**Malaysia**	**5.85**	Timor-Leste	2.09
Canada	11.09	Iraq	4.11	Nepal	1.65
Poland	9.65	Republic of Moldova	3.02	Zimbabwe	1.08
United Kingdom	8.43	Colombia	1.77	Sri Lanka	1.02
Austria	7.23	Guatemala	1.18	Indonesia	0.94
Chile	6.07	Tuvalu	1.70	Bhutan	0.66
Oman	5.70	Russian Federation	0.39	Ghana	0.45

Source: Data retrieved from WHO NHWA Data Platform https://apps.who.int/nhwaportal/Home/Index.

Note: Data retrieved from the portal are updated up to January 2021

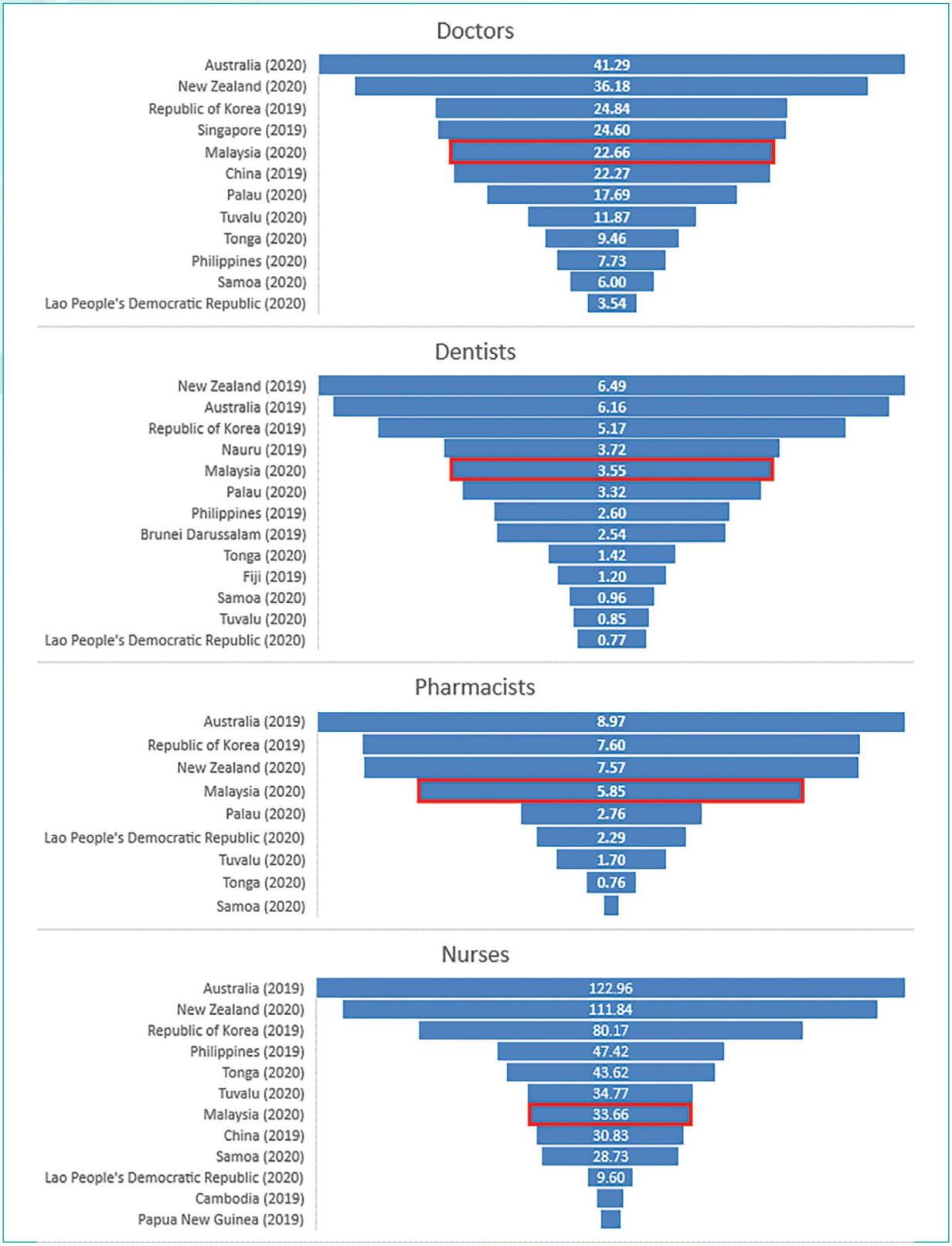
Table 11: Number of Nurses per 10,000 population by World Bank Income Classification, 2020

High Income		Upper Middle-Income		Lower Middle-Income	
Country	**Density**	**Country**	**Density**	**Country**	**Density**
Belgium	188.67	Russian Federation	58.99	Ghana	30.83
Netherlands	116.43	Albania	54.53	Samoa	28.73
New Zealand	111.84	Maldives	46.60	Indonesia	22.51
Canada	110.73	Republic of Moldova	45.40	Nepal	21.30
United Kingdom	83.69	Costa Rica	38.02	Sri Lanka	20.87
Poland	61.20	**Malaysia**	**33.66**	Bhutan	20.77
Italy	59.88	Guyana	30.98	India	17.48
Kuwait	46.83	Iraq	22.37	Zimbabwe	15.14
Latvia	42.24	Guatemala	22.36	Timor-Leste	12.34
Oman	37.00	Gabon	21.12	Lao People's Democratic Republic	9.60
Chile	35.32	Colombia	14.56	Bangladesh	4.07

Source: Data retrieved from WHO NHWA Data Platform https://apps.who.int/nhwaportal/Home/Index.

Note: Data retrieved from the portal are updated up to January 2021

Figure 13: Density of Doctors, Dental Practitioner, Pharmacists and Nurses per 10,000 population in Malaysia and selected Western Pacific Region countries, 2019 and 2020



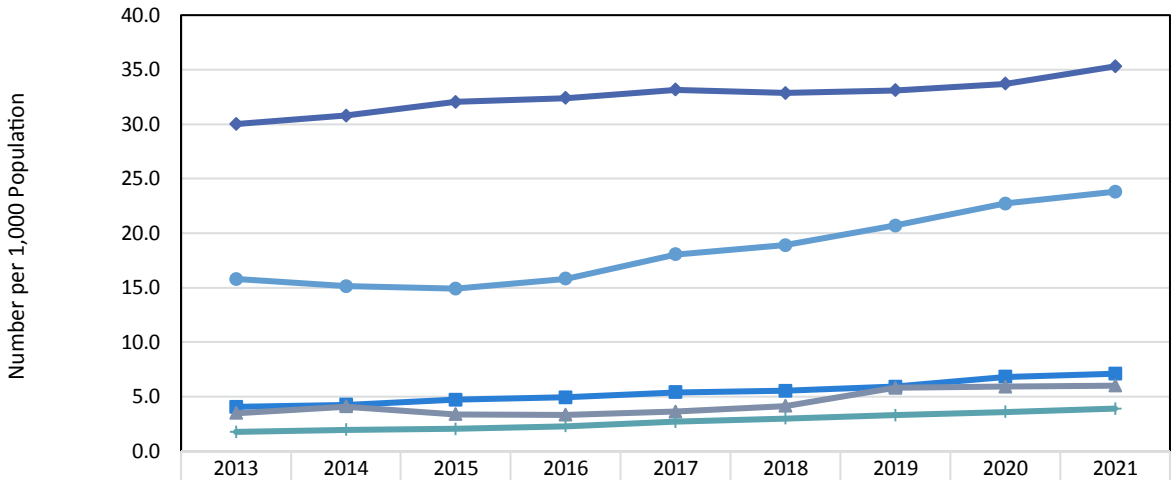
Source: Data retrieved from WHO NHWA Data Platform https://apps.who.int/nhwaportal/Home/Index

Note: a) Data retrieved from the portal are updated up to January 2021 b) Data in 2019 and 2020 is used in this chart because of lack in data availability for year 2021 during the data retrieval process from the website.

2.2 RECENT TRENDS

Since 2013, the increase in numbers for each HRH has rapidly outpace population growth, resulting in a quick rise in stock numbers in a few categories of HRH (Figure 14).

Figure 14: Trends of Health Workforce in Malaysia 2013–2021



	2013	2014	2015	2016	2017	2018	2019	2020	2021
Nurses	30.0	30.8	32.0	32.4	33.2	32.8	33.1	33.7	35.3
Doctors	15.8	15.1	14.9	15.8	18.0	18.9	20.7	22.7	23.8
AMO	4.1	4.2	4.7	4.9	5.4	5.5	5.9	6.8	7.1
Pharmacists	3.5	4.1	3.4	3.3	3.6	4.1	5.8	5.9	6
Dentists	1.8	2.0	2.0	2.3	2.7	3.0	3.3	3.6	3.9

Source: Ministry of Health (2014–2022)

Figure 14 illustrates the gradual increase in the number of HRH professions from 2013-2021. Since the last report, the increasing trend in Malaysia's HRH density has continued for all five professions.

There was a steady increase in the total number of pharmacists until 2014. However, the number became stagnant between 2015 and 2017 due to technical difficulties involving a new platform for pharmacist registration, as described in the previous report published in 2020. Nevertheless, these technical difficulties were later resolved, and the number of registered pharmacists has been steadily increasing from 2017 to 2021.

Table 12: Percentage of Increase in Malaysia Health Workforce, 2008–2021

Personnel	2008 (per 10,000 population)	2021 (per 10,000 population)
Doctors	9.11	23.80
Dental Practitioner	1.32	3.90
Pharmacists	2.32	6.00
Assistant Medical Officer (AMO)	3.30	7.10
Nurses	19.68	35.30
Community Nurses	6.77	6.30

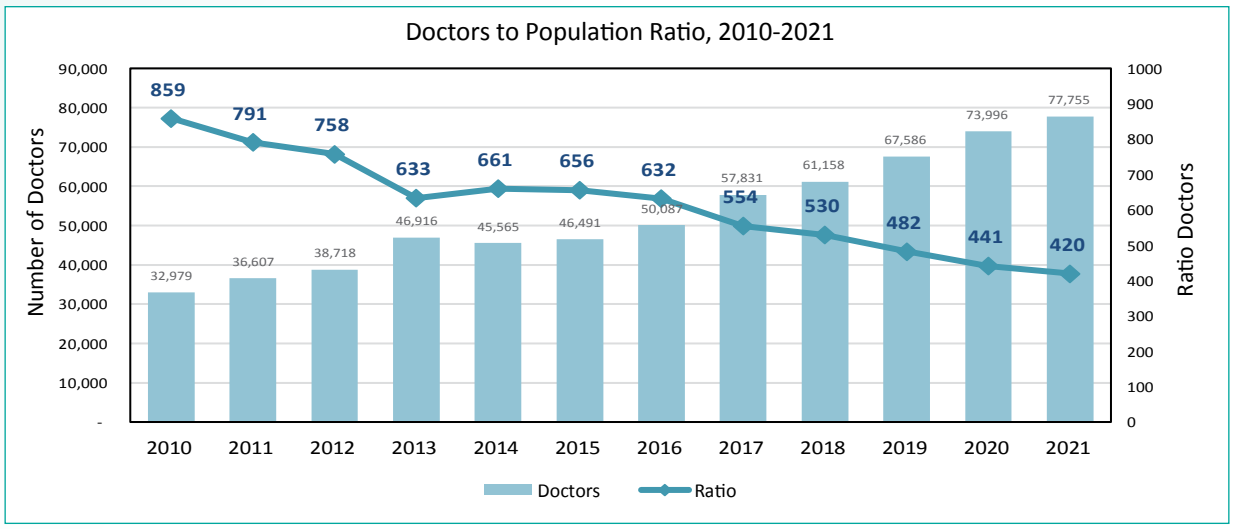
Source: Ministry of Health (2009, 2022)

In the span of thirteen (13) years, the density of doctors improved from 9.11 per 10,000 population (2008) to 23.80 per 10,000 population (2021). The density for Dental Practitioner, on the other hand, improved from 1.32 per 10,000 population (2008) to 3.90 per 10,000 population (2021), and for pharmacists, there was an improvement from 2.32 per 10,000 population (2008) to 6.00 per 10,000 population in 2021. For nurses, there has been a noticeable improvement in density from 19.68 per 10,000 population (2008) to 35.30 per 10,000 populations in 2021. For Assistant Medical Officers (AMOs), the improvement was from 3.30 per 10,000 population (2008) to 7.10 per 10,000 population in 2021.

2.1.2 TRENDS OF HEALTH PROFESSION BY RATIO COMPARISON

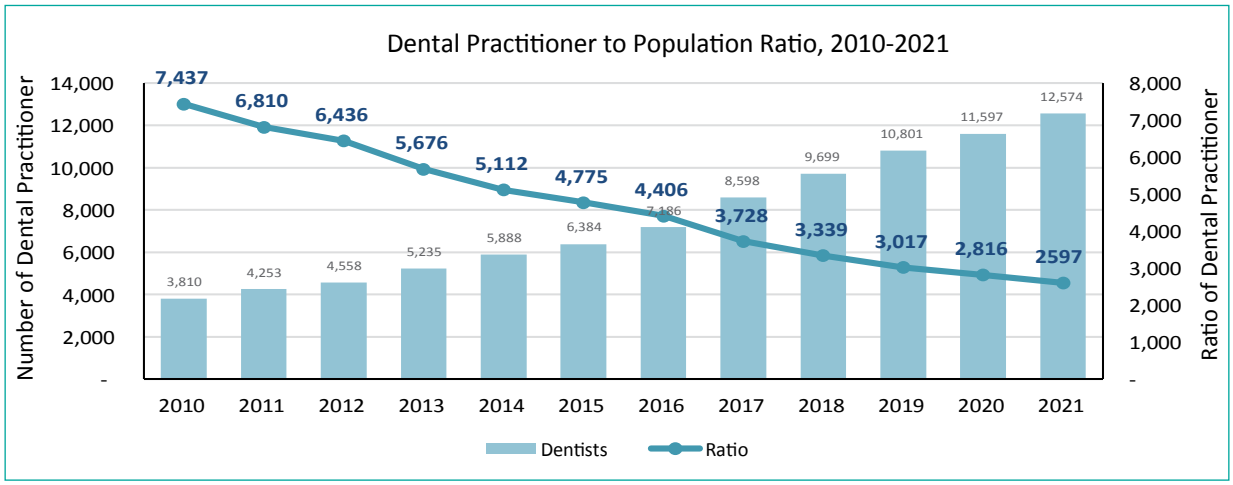
In this section, HRH data is presented as number of personal to population ratio to reflect the size of the health workforce in supporting the population needs of the country. The HRH workforce ratio of five health profession to the population is outlined in Figure 15 to 19.

Figure 15: Doctors to Population Ratio, 2010–2021



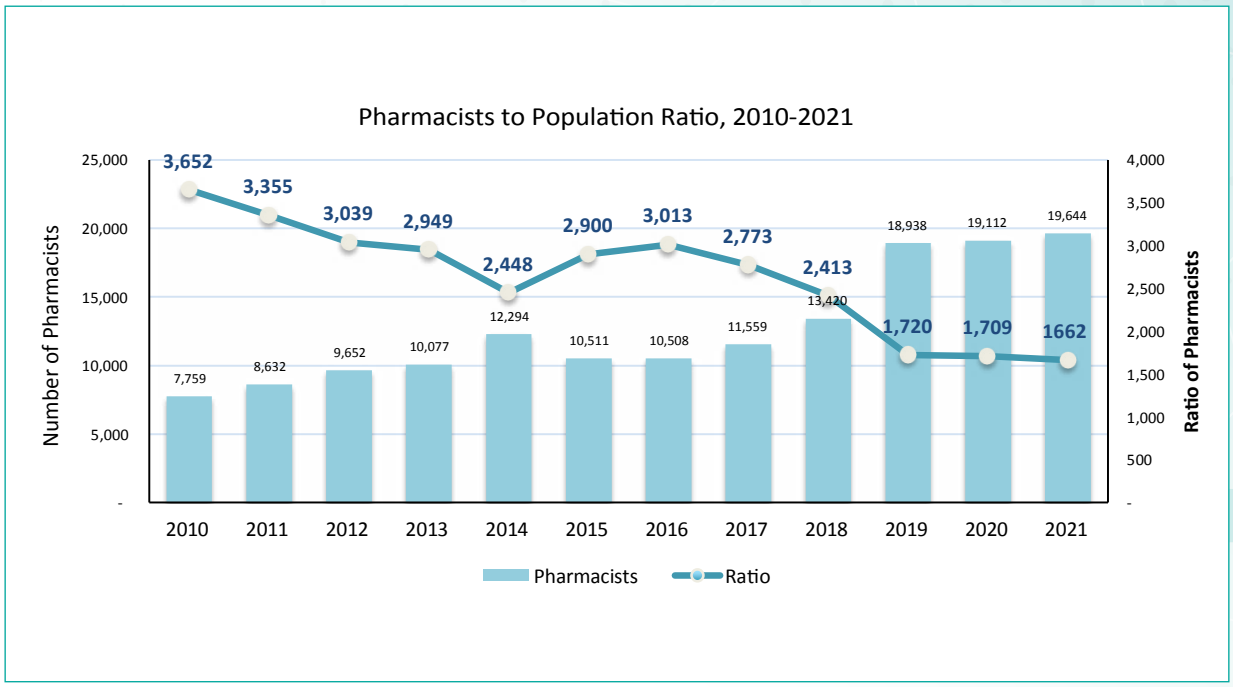
Source: Ministry of Health (2011–2022)

Figure 16: Dental Practitioner to Population Ratio, 2010–2021



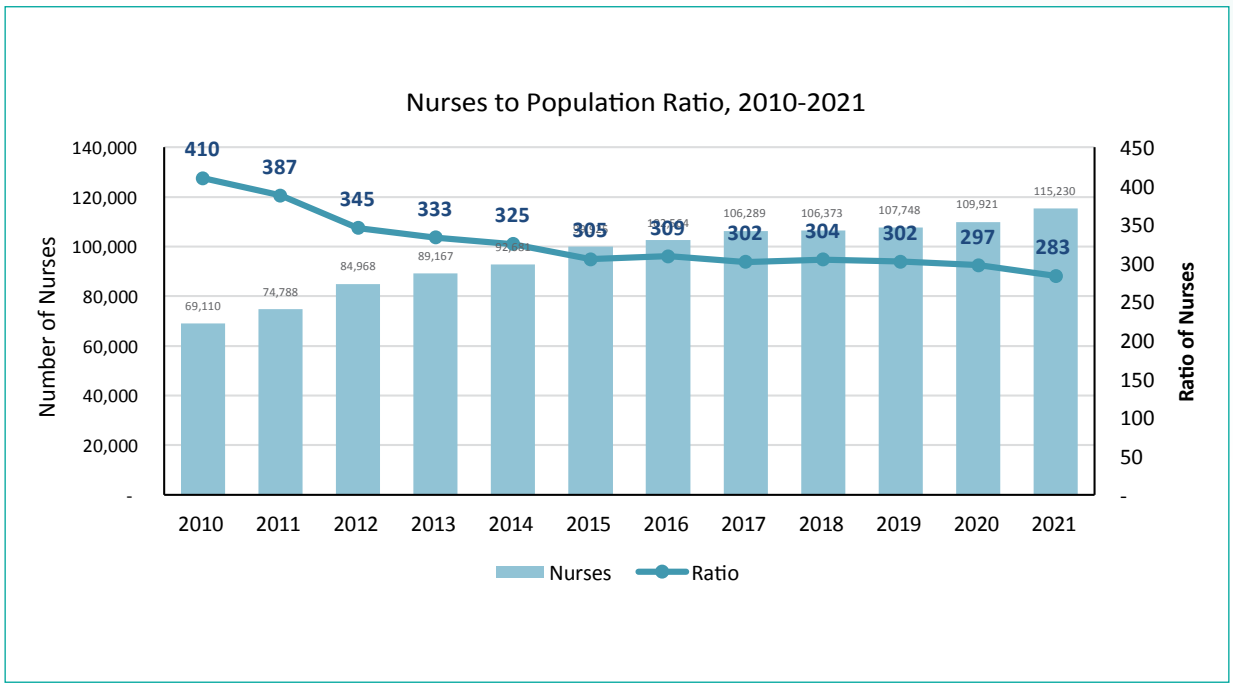
Source: Ministry of Health (2011–2022)

Figure 17: Pharmacists to Population Ratio, 2010–2021



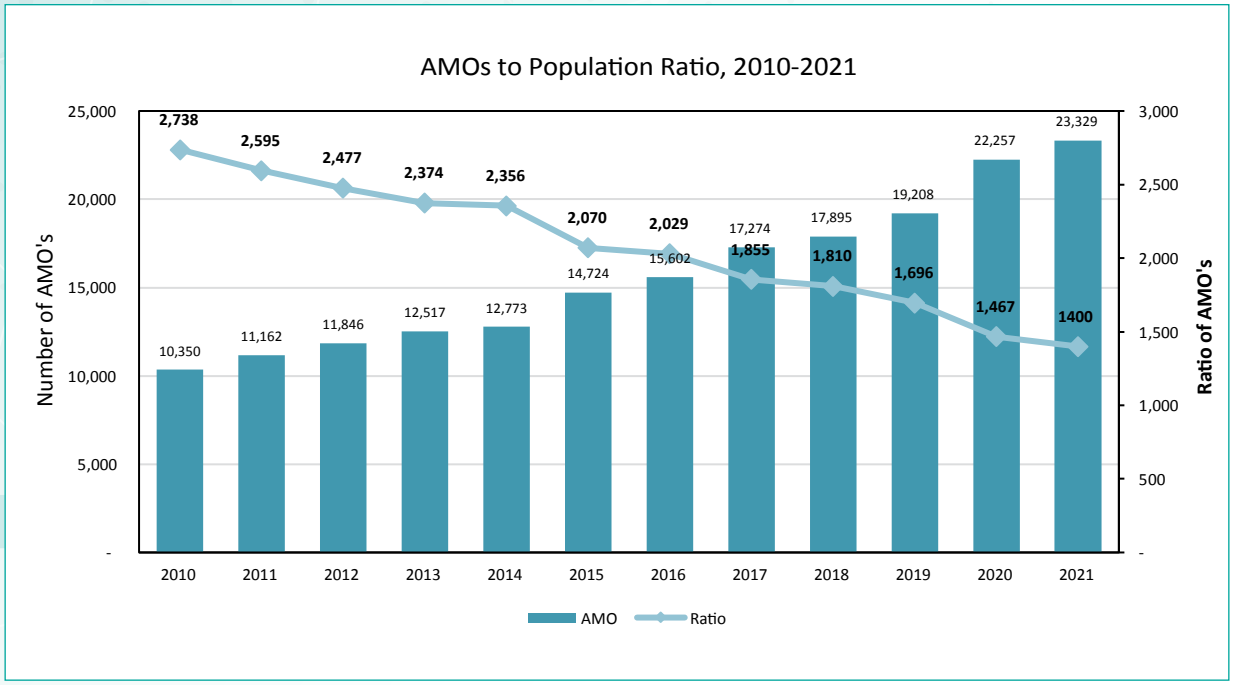
Source: Ministry of Health (2011–2022)

Figure 18: Nurses to Population Ratio, 2010–2021



Source: Ministry of Health (2011–2022)

Figure 19: AMOs to Population Ratio, 2010–2021

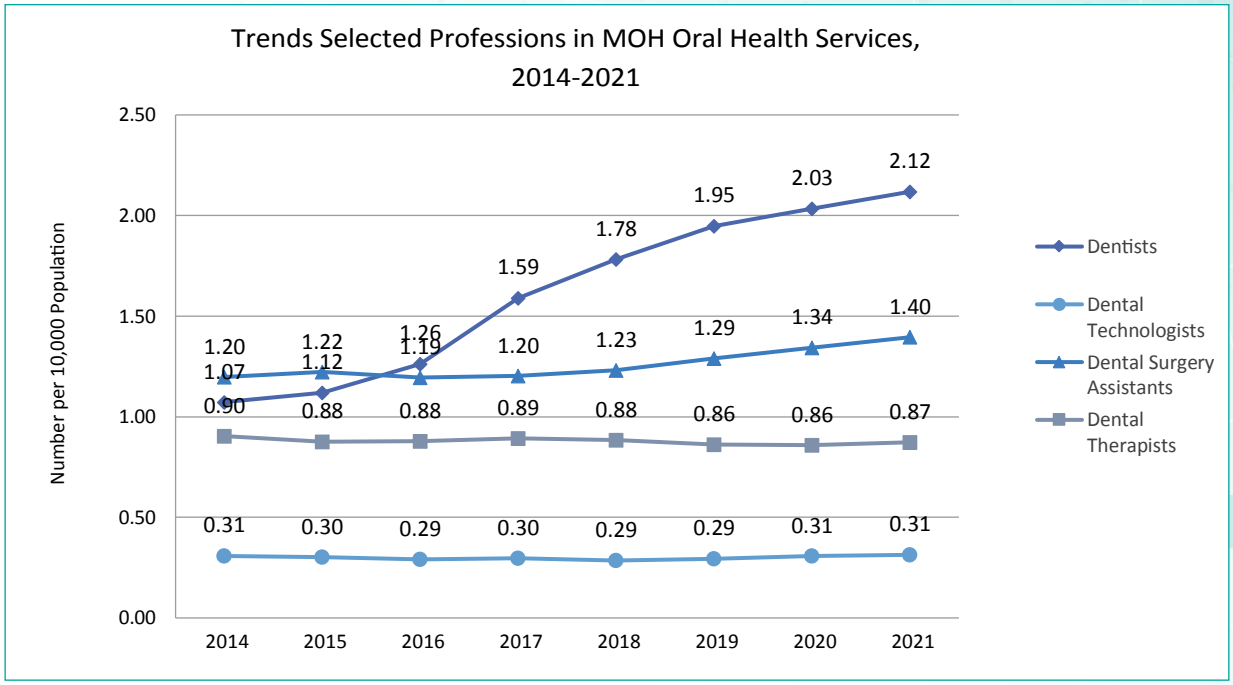


Source: Ministry of Health (2011–2022)

In general, the healthcare demands in Malaysia can be presumed to be increasing along with population growth. From the above graphical presentations, the 11-year period from 2010 to 2021 illustrates the growth of the health workforce in every profession. At the same time, the ratio to the population for every profession seems to be improving over the years, signifying an increasing size of the workforce to comply with the healthcare services demand. However, when benchmarking with the OECD average, Malaysian doctors, dental Practitioner, pharmacists and nurses' ratios are at 1:420, 1:2597, 1:1662 and 1:283, respectively, while OECD average ratios are situated at 1:193, 1:917, 1:769 and 1:103 respectively. Although the ratio to population indicates that Malaysia is still having a big gap as compared to OECD countries, the size of the healthcare workforce has been improving over the years.

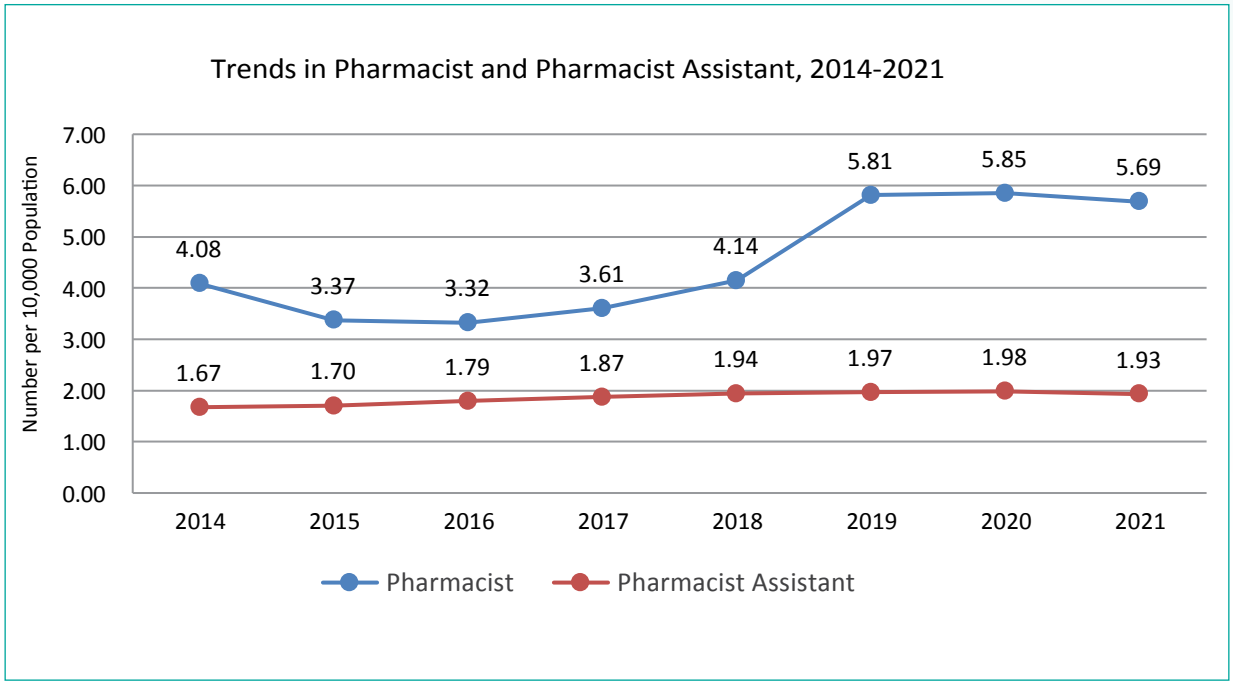
Figure 20 shows the trend of dental Practitioner s and allied dental health professionals in MOH. There is a very minimal increase in the number of allied dental health professionals in the past four years as compared to dental Practitioner.

Figure 20: Trends of Selected Professions in MOH Oral Health Services, 2014–2021



Source: Ministry of Health (2015–2022)

Figure 21: Trends in Pharmacist and Pharmacist Assistant, 2014–2021



Source: Ministry of Health (2015-2022)

Although the number of pharmacists fluctuate over the years, there was no marked difference in the number of pharmacist assistant especially in last four years (Figure 21).

2.3 ISSUES ARISING FROM THE RAPID INCREASE OF NEW GRADUATES ENTERING THE WORKFORCE

SSince 2015, the Government has implemented the Policy on Optimisation of Human Resources in the Public Service (Public Service Department, Prime Minister's Office, Annual Report 2020) and Policy on Rationalisation of Size of Public Service (Public Service Department, 2019) as efforts to optimise public funding and ensure prudent spending. With regards to the implementation, no new permanent position was approved for all ministries unless through a trade-off mechanism with the available vacant posts.

At the same time, part of the permanent positions for Medical Officer Grade UD41 (for housemanship training) cannot be vacated and filled timely as more than 30% of house officers were unable to complete their training within the stipulated time frame, which is two (2) years. The extension of the housemanship period was due to administrative reasons (46%) and other issues (54%). (I., Munirah et al, 2022).

The situation of limited permanent positions compounded with the increment of graduates over the years had exacerbated the issue of the long waiting time for housemanship training or compulsory service posting in the Ministry of Health (MOH).

To overcome the issue, the Government implemented the contract appointment policy on all medical, dental, and pharmacy graduates starting from December 2016. This strategy is envisioned to shorten the waiting time for housemanship and compulsory service posting as the contract appointment does not depend on the availability of permanent positions. Furthermore, MOH would be given the authority to adjust the slots required for each healthcare facility based on the capacity in delivery of the training.

The tenure of the contract for housemanship or provisional training and compulsory service that the Government decides is Table 13.

Table 13: The duration of housemanship / provisional training for HRH and the associated compulsory service period.

Professions	Contract Tenure (years)		Overall Tenure (years)
	Housemanship/ Provisional Training	Compulsory Service	
Medical Officer (Doctor)	3	2	5
Dental Officer (Dental Practitioner)	-	3	3
Pharmacist	2	1	3

Source: Human Resource Division, 2022 (Unpublished)

From the implementation of contract appointment in 2016 until November 2022, a total 43,574 officers were recruited on the contract basis by MOH, which consisted of 29,548 doctors, 6,582 dental Practitioner, and 7,444 pharmacists.

Table 14: Contract appointments by professions, 2016–2022

Professions	2016	2017	2018	2019	2020	2021	2022	Total
Medical Officer (Doctor)	1,217	4,903	4,924	6,139	5,113	4,007	3,245	**29,548**
Dental Officer (Dental Practitioner)	-	1,329	1,125	1,173	864	1,096	995	**6,582**
Pharmacist	512	1,146	1,919	1,199	733	1,154	781	**7,444**
Total	**1,729**	**7,378**	**7,968**	**8,511**	**6,710**	**6,257**	**5,021**	**43,574**

Source: Human Resource Division, 2022 (Unpublished)

Despite the shift in appointment mechanism to a contract basis, professionals from three (3) fields who have completed their housemanship / provisional training and/or compulsory service are offered chances to secure permanent positions within the Ministry of Health (MOH) based on specific criteria and the presence of vacancies. As of November 2022, a total of 4,192 doctors, 1,415 dental Practitioner, and 1,652 pharmacists have been successfully appointed to permanent positions.

Additionally, in July 2021, the Government further refined the contract appointment policy. Under this refinement, officers who completed their compulsory service can be offered an extension of their contract for an additional two (2) years, providing them with an opportunity for specialization in their respective fields. Furthermore, doctors and dental Practitioner who enter specialist training and meet specific criteria during the two (2) years may be granted an additional extension of their contract for four (4) years to complete their specialization. Table 15 outlines the refinements made in 2021. Summary of the contract tenure with the enhancement as described in Table 15.

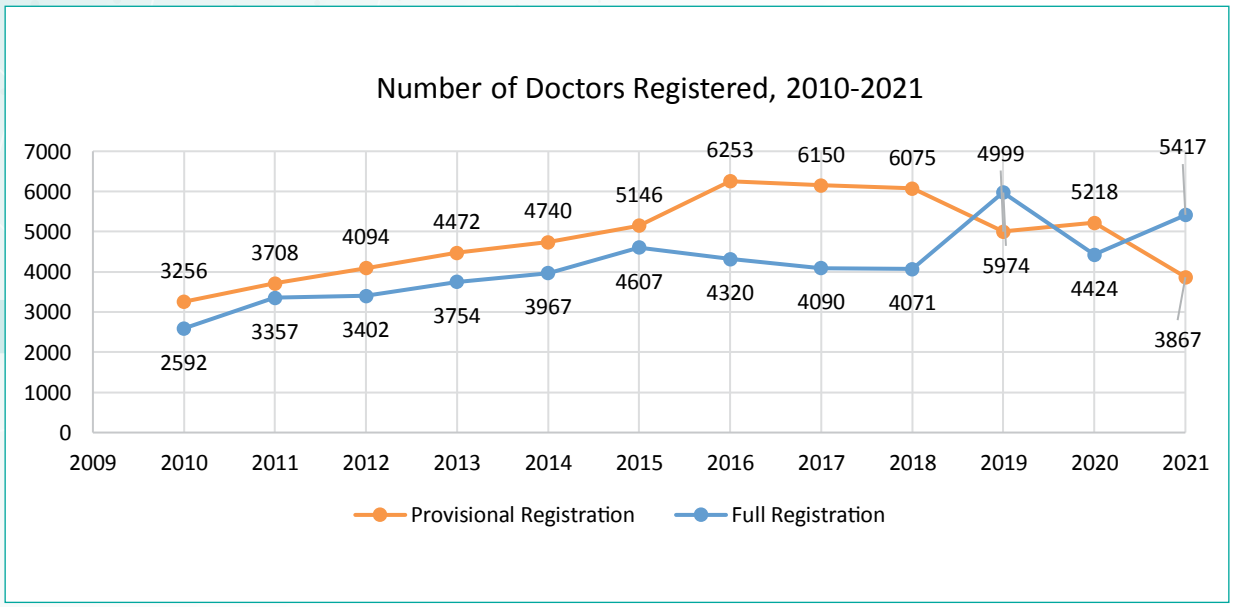
Table 15: Summary of the contract tenure with the enhancement

Professions	Contract Tenure (years)				Overall Tenure (years)
	Contract Appointment Since 2016		Enhancement Starting From 2021		
	Housemanship / Provisional Training	Compulsory Service	Continuity of Service	Specialisation Training	
Medical Officer (Doctor)	3	2	2	4	11
Dental Officer (Dental Practitioner)	-	3	2	4	9
Pharmacist	2	1	2	-	5

Source: Human Resource Division, 2022 (Unpublished)

The trend of new medical graduates (provisional registered) and new fully registered doctors in the medical fraternity is illustrated in Figure 22. In 2016–2018, there was a slight decrease in the total number of doctors obtaining full registration. Subsequently, there is a fluctuate in numbers, as seen in Figure 22.

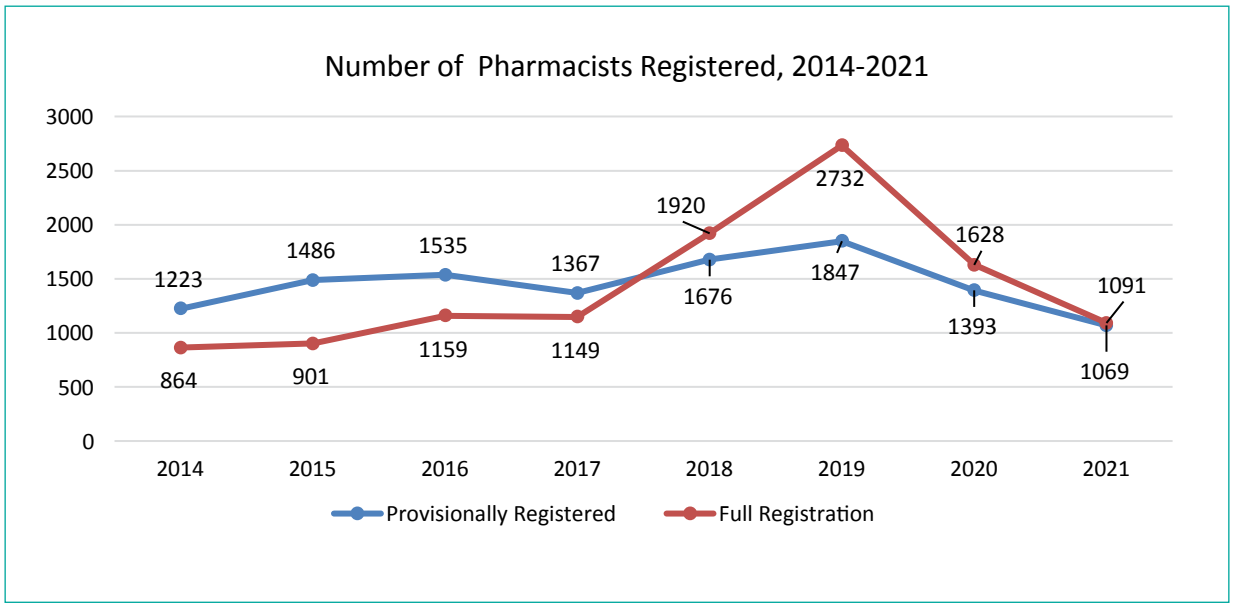
Figure 22: Number of Doctors Obtaining Provisional and Full Registration, 2010–2021



Source: Malaysian Medical Council (2022)

Figure 23 Illustrates the number of pharmacists gaining their provisional registration and full registration between 2014 and 2021. It shows that the number is almost similar every year except for 2018 to 2020, where the number of fully registered pharmacists is higher than that number of provisional registered pharmacists.

Figure 23: Number of Pharmacists Obtaining Provisional and Full Registration, 2014–2021



Source: Pharmacy Board Malaysia (2022)

KEY MESSAGES

1. The current number of specialists, doctors, dental Practitioner, pharmacists and nurses in Malaysia is comparatively low compared to high-income countries. However, differences in population profile, morbidity patterns and health service delivery patterns need to be taken into account.

2. Although Malaysia's healthcare workforce is still far from reaching the average set by high-income countries, the trend of the latest statistics may suggest positive growth towards achieving the standard.

3. Increasing demands for healthcare from the growing populations rationalise the need for a more significant workforce, reflected in the increasing employment year over year.

4. The introduction of contract appointments of doctors in 2016 has reduced the waiting period for medical graduates to undergo graduate training and compulsory service, as this appointment will no longer have to rely on permanent post vacancies.

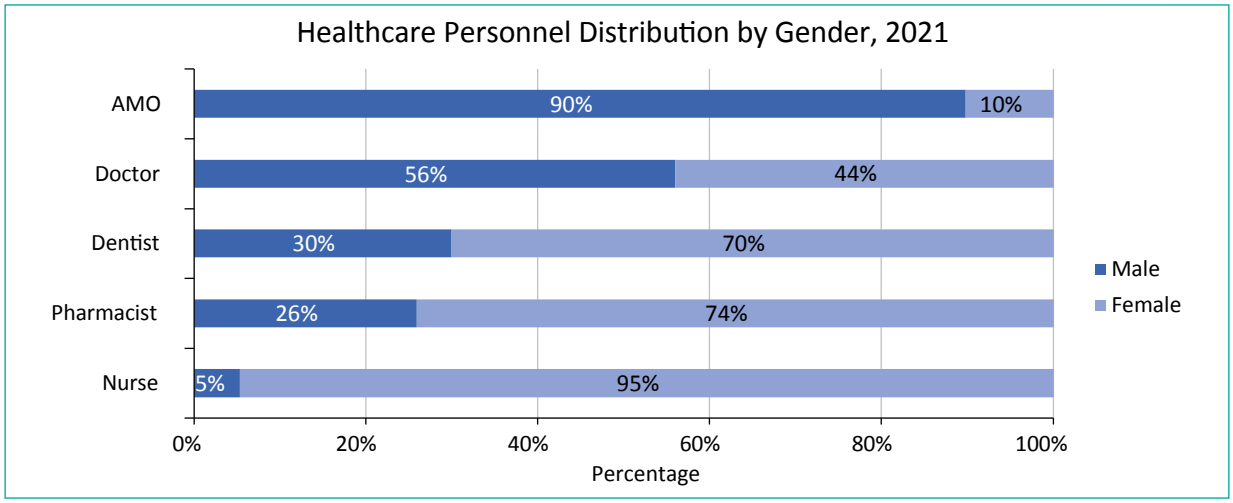
5. The demand for healthcare services in Malaysia is expected to increase in tandem with the growth of the population and societal awareness, and the statistics may suggest that more recruitment is needed in the following years to comply with all the demands.

3. HEALTH WORKFORCE DISTRIBUTION

3.1 GENDER DISTRIBUTION

In Malaysia, the health workforce is predominantly female in most professions Figure 24. However, in 2021, data shows Doctors and AMOs consist of 56% and 90% male, respectively. Nurses are almost entirely female (95%), while pharmacists and Dental Practitioner are 74% and 70% female-dominant.

Figure 24: Healthcare Personnel Distribution by Gender, 2021



Source: Data on doctors from Malaysian Medical Council (2022); Dental Practitioner from Malaysian Dental Council (2022); pharmacists from Pharmacy Board Malaysia (2022); nurses from Nursing Board Malaysia (2022); Assistant Medical Officers from Medical Assistants Board (2022).

Moving on to gender distribution, in 2021, the majority of healthcare providers in most categories are female, with the exception of doctors and AMOs (Assistant Medical Officers). Interestingly, data from the MMC (Malaysian Medical Council) for 2021 showed that doctors are represented by 56% males and 44% females, marking a slight shift from the previous year when male doctors accounted for 45% and female doctors were at 55%.

On the other hand, nurses continue to be predominantly female, making up 95% of the profession. Among pharmacists, over 74% are female, and for dental Practitioner, the figure stands at 70% being female. In 2021, AMOs recorded a modest increase in female representation, reaching 10%, which shows a slight improvement compared to the previous year's 9.7%. The prevalence of female health workers carries significant implications for future strategic HRH planning. For instance, the consideration of work-from-home arrangements and flexible hours becomes crucial to facilitate women in sustaining their careers while also fulfilling caregiving responsibilities.

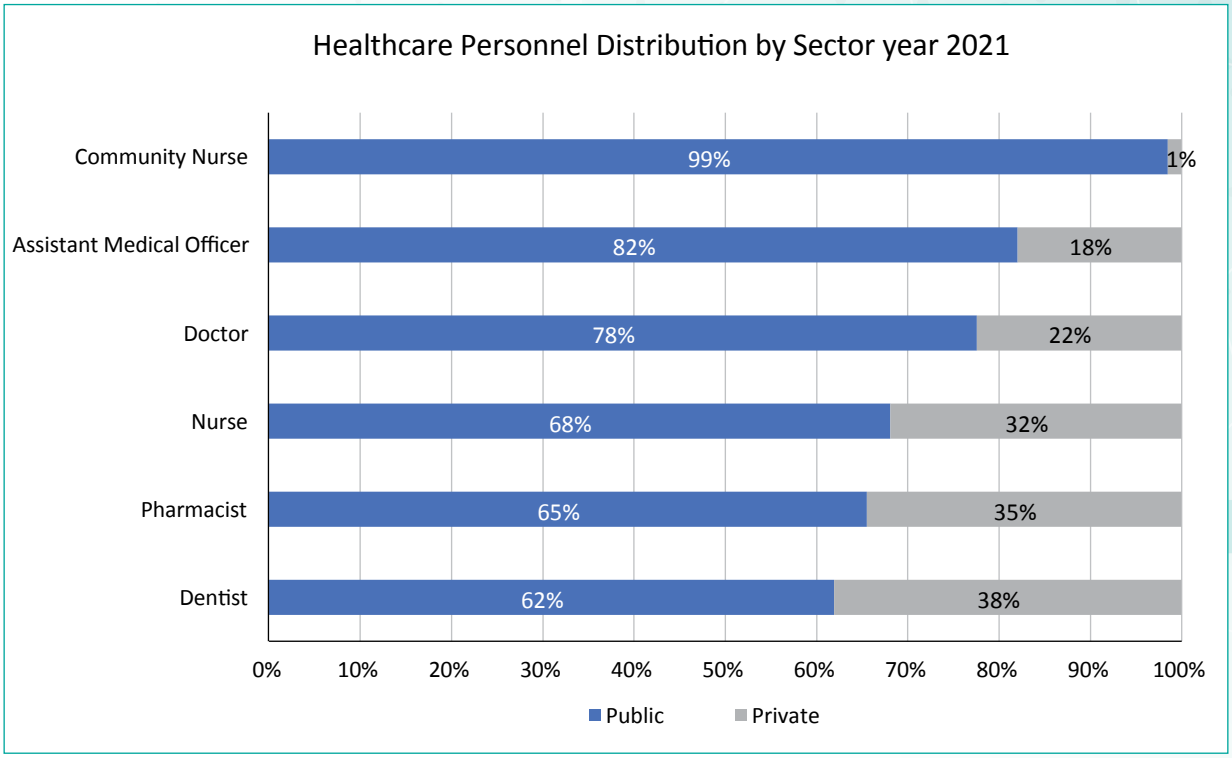
The government has implemented several initiatives to enhance the welfare of female workers. In 2017, the Public Service Department (PSD) extended full-paid maternity leave for public servants from 300 to 360 days over the course of their service period (Ministry of Public Services, 2022). Additionally, amendments to the Employment Act 1955 have prolonged the duration of paid maternity leave for private sector workers from 60 days to 98 days, effective from January 1st, 2023 (Employment Act 1955).

3.2 PUBLIC AND PRIVATE DISTRIBUTION

TThe distribution of HRH according to the two sectors - public and private, is based on HRH's principal place of practice. As illustrated in Figure 25, it can be seen that the majority of the selected HRH i.e., doctors, dental Practitioner, pharmacists, nurses, community nurses and AMOs are employed in the public sector. On the other hand, Optometrists and opticians are predominantly employed in private healthcare facilities.

Based on the sectoral distribution published in Health Facts in 2021, the majority of healthcare personnel are in the public sector, except for optometrists and opticians; 82% of optometrists are in the private sector, and 100% of opticians are working in the private sector. In the same year, 71.9% of doctors were in the public sector, and the remaining 20.8% were in the private sector. In comparison, 62% of dental Practitioner are in the public sector, and 38% are in the private sector. Similarly, 65% of pharmacists are in the public sector, and 35% are in the private sector. This trend is also seen for both nurses and AMO's, where 68% of nurses are in the public sector, 32% are in the private sector, and for AMO's, 82% are in the public sector, and 18% are in the private sector.

Figure 25: Healthcare Personnel Distribution by Sector, 2021



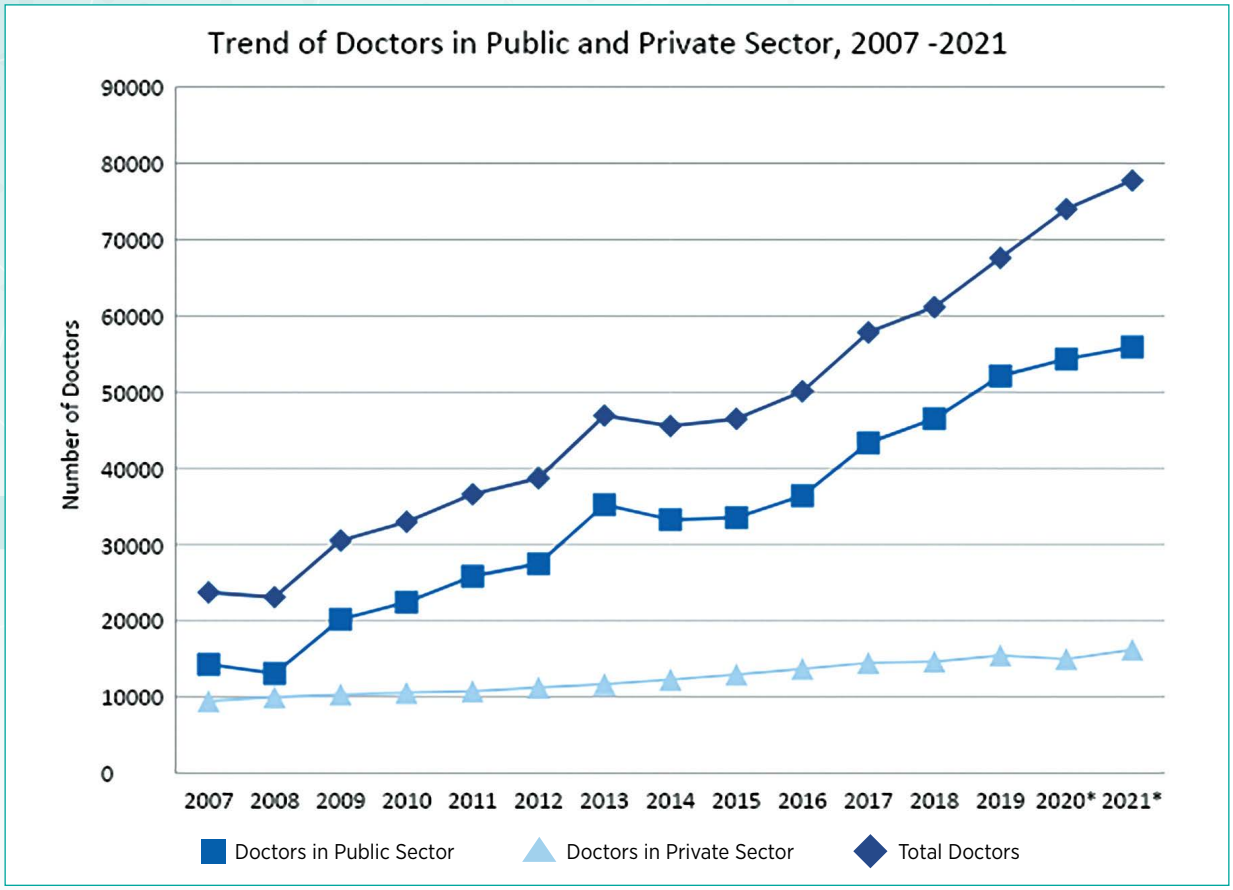
Source: Ministry of Health (2022)

3.2.1 Distribution of Doctors by Sector

From 2007 to 2021, there has been a noticeable upward trend in the number of doctors in the country. As shown in Figure 26, the increase in the number of doctors is primarily observed within the public sector. The ratio of doctors working in the public sector to those in the private sector expanded to 3:1 in 2021, compared to the 2:1 ratio noted in 2009. This shift in pattern can be attributed to the significant influx of new medical graduates joining the workforce between 2008 and 2014. This surge is largely driven by regulatory requirements that mandate these graduates to undertake a two-year period of service as house officers (commonly referred to as housemanship) within the public sector, followed by an additional two years of compulsory service in the same sector.

The extension of the housemanship period from one year to two years in 2008 further contributed to this changing landscape. Subsequently, starting from 2016, a contract appointment system for new medical graduates was introduced due to the limited number of available posts within the Ministry of Health (MOH). As a result, there has been a notable rise in the ratio of doctors within the public sector in comparison to the private sector.

Figure 26: Trend of Medical Officer in Public and Private Sector, 2007–2021



Source: Ministry of Health (2008-2022)

**Note: Total number of doctors in 2020 & 2021 does not include full registration due to unavailability of sector classification. In 2020 and 2021, there was 3765 and 5605 fully registered doctors, respectively.*

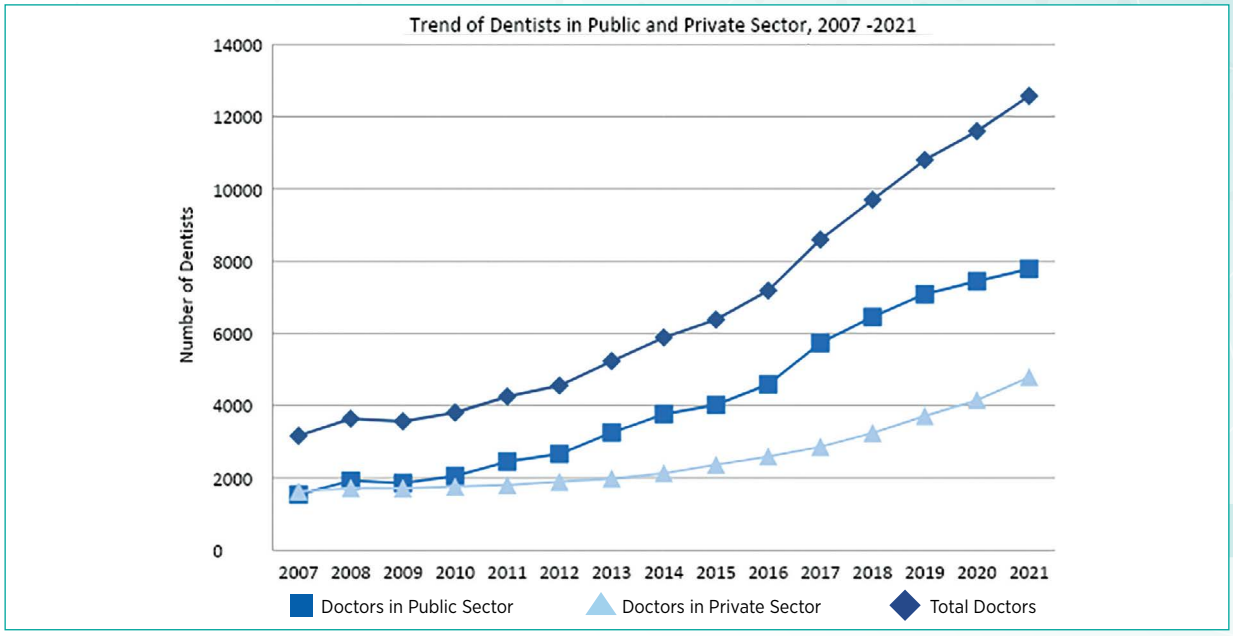
3.2.2 Distribution of Dental Practitioner by Sector

In 2021, the ratio of dental practitioners between the public and private sectors stood at 1.6:1, demonstrating an increase from the 1:1 ratio recorded in 2009 (Figure 28). Analyzing the data from 2021, it is evident that 62% of dental practitioners are employed within the public sector, while the remaining 38% work in the private sector.

Throughout the years, there has been a consistent rise in the number of dental practitioner opting to serve in the public sector, resulting in a nearly twofold difference in the number of dental practitioner s compared to the private sector. This upward trend mirrors the pattern observed among new medical graduates, and the surge in dental practitioner within the public sector can be attributed to the growing influx of fresh dental graduates joining the workforce.

A dental practitioner who is newly registered under Section 12 of the Dental Act 1971 is mandated to fulfill the role of a dental officer in the public sector for a continuous duration of no less than one year.

Figure 27: Trend of Dental Practitioner by Sector, 2007–2021

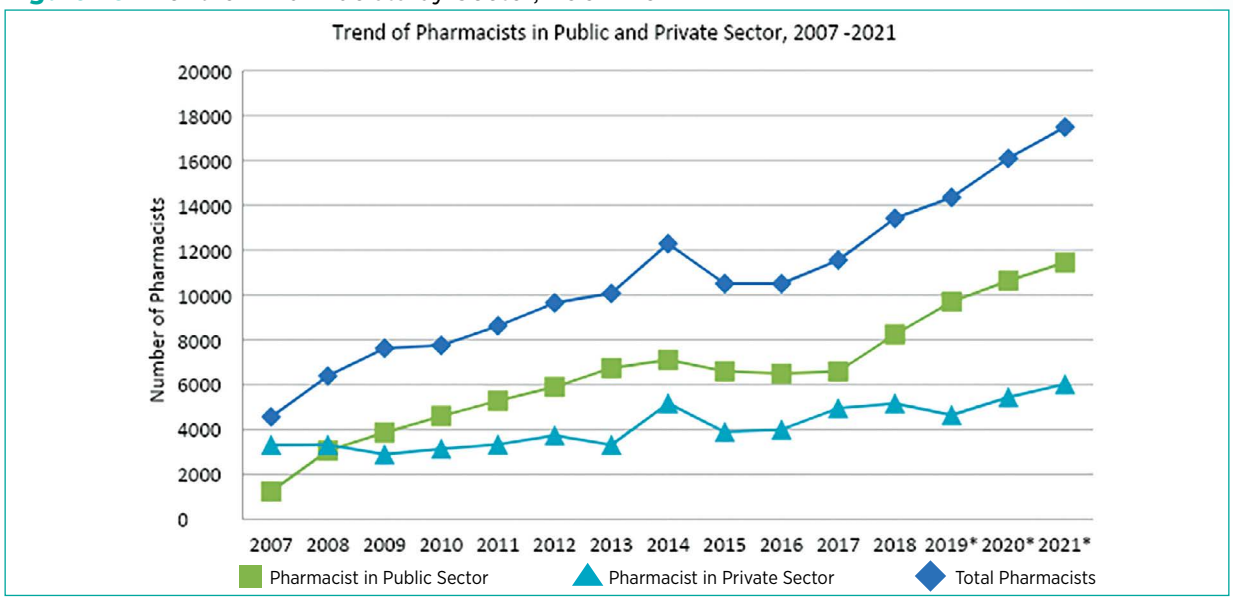


Source: Ministry of Health (2008–2022)

3.2.3 Distribution of Pharmacists by Sector

Throughout 2007, an upward trend in the number of pharmacists is evident within the public sector. This trend is depicted in Figure 28, where the public-private ratio for pharmacists is approaching 2:1. The increment of pharmacists in the public sector can be attributed to the significant influx of graduates entering the workforce, driven by regulatory requirements that mandate an initial service period within the public sector.

Figure 28: Trend of Pharmacists by Sector, 2007–2021



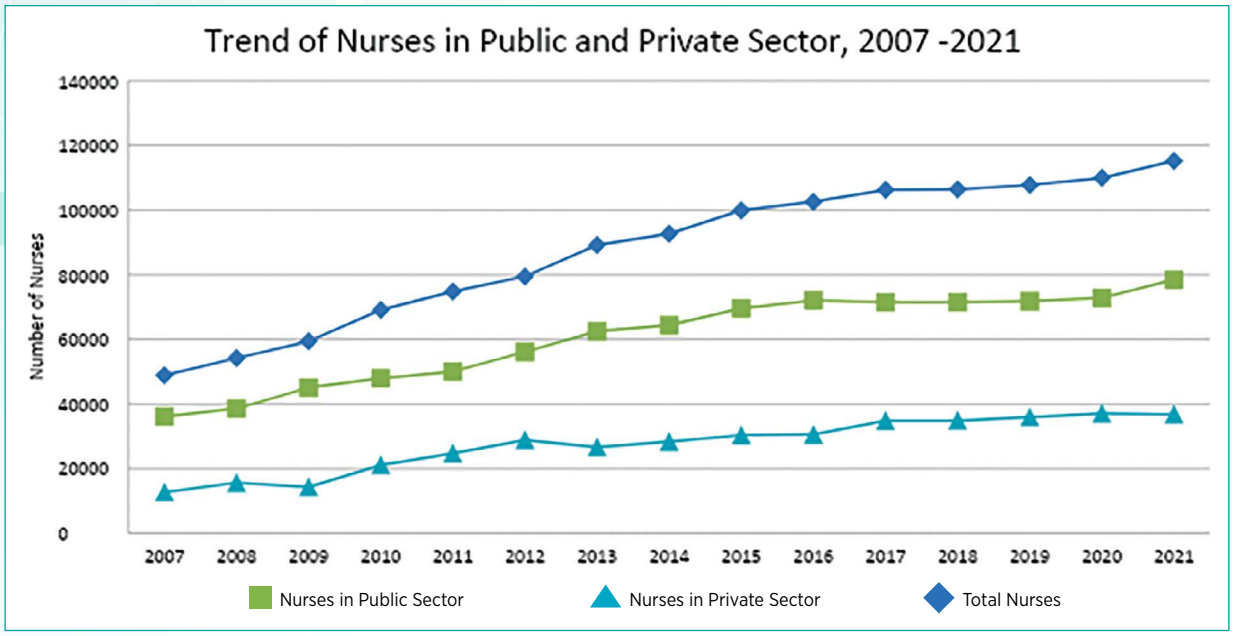
Source: Ministry of Health (2008–2022)

**Note: Total number of pharmacists from 2019 to 2021 does not include provisional and full registration due to the unavailability of sector classification. In 2019 and 2020, there were 4,579 and 3,021, provisional and fully registered pharmacists respectively. In 2021, there were 1091 fully registered pharmacists reported.*

3.2.4 Distribution of Nurses by Sector

Under the nurses' cadre, the public-private ratio was 3 to 1 in 2007. In 2021, the ratio was 2 to 1, where progressive expansion in the nursing workforce is seen over the years regarding sector distribution. From Figure 29, it can be seen that from 2016 to 2020, there has been a steady increment in the number of nurses.

Figure 29: Number of Nurses by Sector, 2007–2021



Source: Ministry of Health (2008–2022)

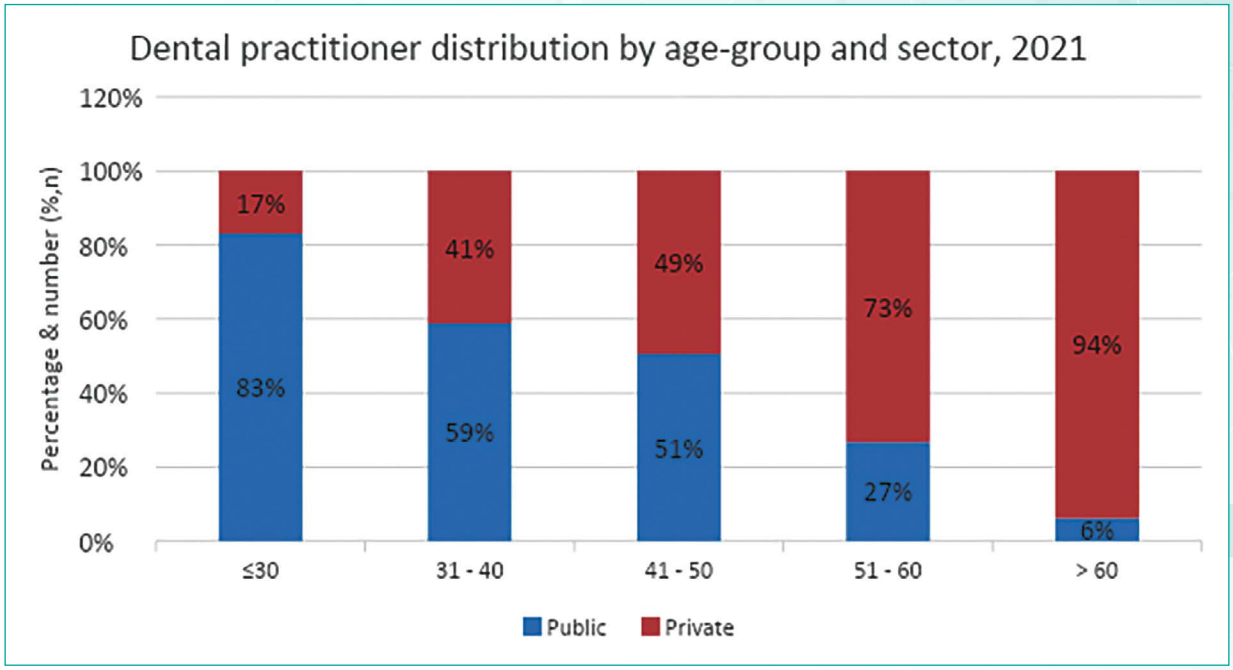
3.3 AGE DISTRIBUTION

In this section, data availability on age distribution by sector is limited to dental practitioner only. For the other professions, data are available for HRH employed by MOH.

3.3.1 Dental Practitioner

Figure 30 illustrates the distribution of dental practitioner in Malaysia by age group and sector. In 2021, the majority of dental practitioner working in the public sector are below the age group of 50, as compared to the age group of 50 and above, which are predominantly working in the private sector. Growing demand in the dental practitioner market in the private sector has become an attraction for experienced and senior dental practitioner personnel, reflected in the significantly increasing trend of dental practitioner moving to the private sector from 50 years of age and above. Further to that, there are only 6% of dental professionals who remain in public after the age 60.

Figure 30: Dental Practitioner Distribution by Age Group and Sector, 2021



Source: Malaysian Dental Council (2022)

Table 16: Dental Practitioner Distribution by Age Group and Sector, 2021

Dental Practitioner 2021	Public	Private	Total
≤30	3738	761	4499
31 - 40	3222	2258	5480
41 - 50	578	565	1143
51 - 60	204	559	763
> 60	43	653	696

Source: Malaysian Dental Council (2022)

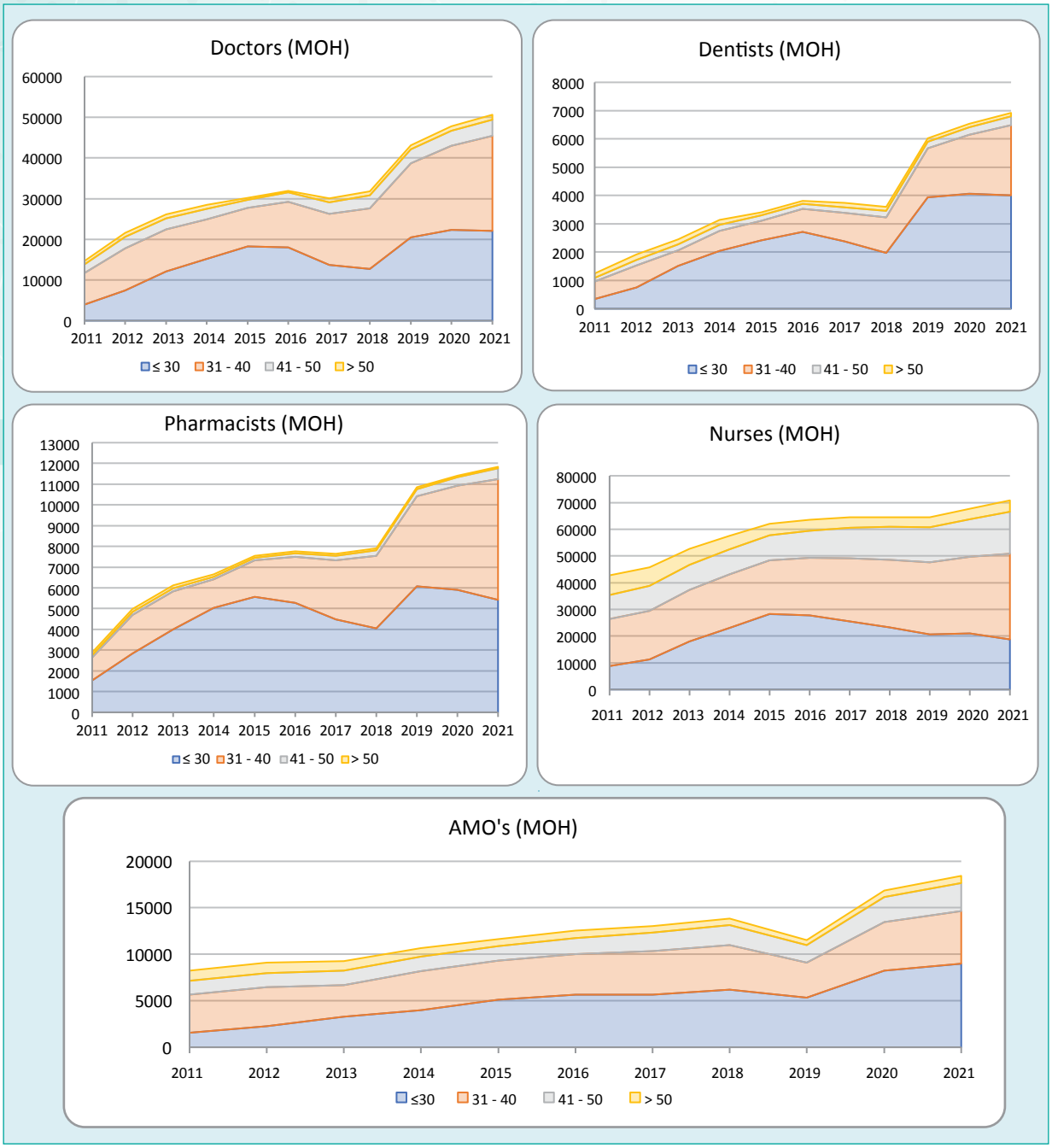
3.3.2 HRH Employed by Ministry of Health: Recent Trends in Age Distribution

The majority of the healthcare workforce employed by the Ministry of Health (MOH) falls within the age range of under 30, followed by those aged between 31 and 40.

However, a noticeable decline in the number of Assistant Medical Officers (AMOs) can be observed across all age categories in the year 2019. Despite this decline, the subsequent year saw an increase in the number of AMOs. Additionally, although there is a minor decrease in the count of healthcare workers under the age of 30, there is an observable rise in the number of personnel aged between 30 and 39 among doctors, dental practitioner, pharmacists, and nurses.

Furthermore, the provided chart suggests that individuals aged 41 to 50 and those above 50 years old constitute the smallest portions within the overall composition of the healthcare workforce.

Figure 31: Trends in Age Group Distribution of MOH Healthcare Personnel, 2022



Source: Human Resources Division (2022)

3.4 GEOGRAPHIC DISTRIBUTION

In line with SDG target 3.8 (United Nations Development Programme, 2015), achieving universal health coverage is made possible by incorporating data on healthcare professionals by region which is crucial in establishing and sustaining the structure of healthcare provision in the region and state. This is to ensure adequate access to healthcare is available for all. Throughout this section, the focus on the number of healthcare personnel will be compared alongside the data related to the populations by region, where, from an optimistic perspective, each region would have a fair density of healthcare workers to make healthcare access possible to all. There is a proportional relationship between the size of the healthcare workforce and the type of healthcare facilities across the Malaysian geography. Therefore, there is a tendency to have a higher number of healthcare personnel in regions that are more urbanised and densely populated than rural and sparsely populated areas.

3.4.1 Regional distribution of selected healthcare personnel in 2021

The west coast region of Peninsular Malaysia has the highest number of personnel per 10,000 population for doctors, pharmacists, nurses and assistant pharmacists. On the other hand, dental practitioner and community nurses are highest in the east coast region.

From Table 19 below, it can be illustrated that the boxes highlighted in blue are highest by number per 10,000 population in comparison with other regions.

Table 17: Number of Healthcare Personnel Per 10,000 Population by Region, 2021

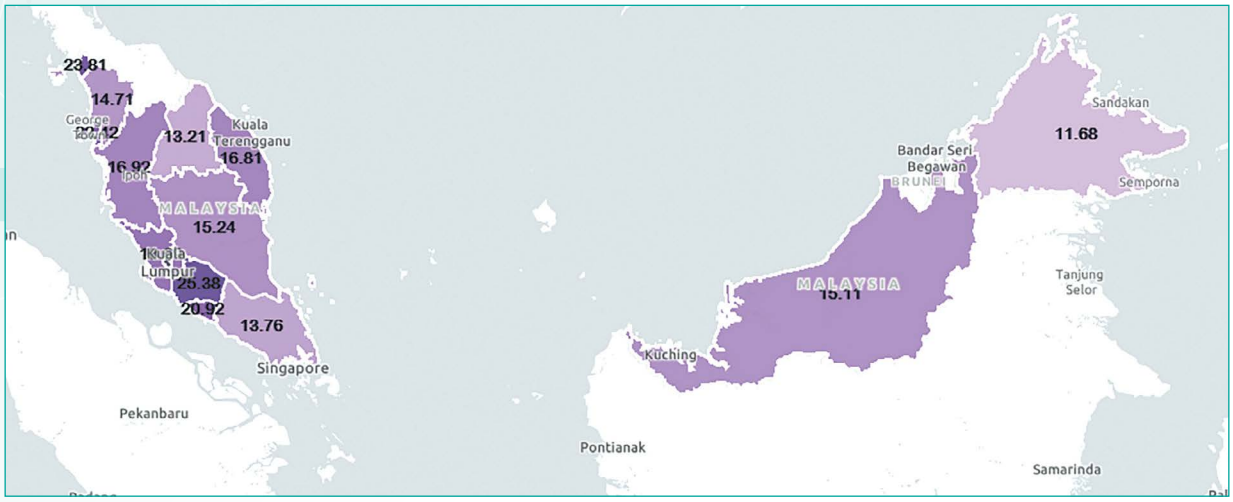
Location / Profession	Malaysia	West Coast	East Coast	Sabah Region	Sarawak Region
Doctors	22.08	25.07	20.71	12.86	15.10
Dental practitioner	3.85	4.32	4.42	1.81	2.21
Pharmacists	5.35	6.19	4.32	2.81	4.44
Nurses	35.29	38.94	31.73	24.53	29.21
AMO's	7.14	6.56	8.63	6.40	9.92
Community Nurses	6.37	5.22	9.30	8.33	7.14
Dental Therapist	0.87	0.71	1.15	0.99	1.46
Assistant Pharmacists	1.93	2.02	1.96	1.43	1.87

Source: Ministry of Health (2022)

Note: a) Total number of doctors and pharmacists in 2021 does not include provisional and full registration due to the unavailability of sector classification. b) Total number of community nurses is documented to be low in the country, mainly due to the cessation of new intake for community nurses in line with the phasing out of community nurses training programmes by the nursing colleges under MOH. The existing and qualified community nurses in MOH will be promoted to registered nurses through the PSL Programme for Community Nurses (Peningkatan Secara Lantikan, PSL).

The west coast region of Peninsular Malaysia holds the largest density of doctors, pharmacists, nurses, and assistant pharmacists. Conversely, the east coast region stands out for having a relatively higher number of community nurses and dental practitioners compared to other areas. Whereas, the AMO's in Sarawak surpasses the count in the west coast region. Generally, the Sabah region exhibits the lowest density in the distribution of various healthcare professionals, excluding community nurses and dental therapists.

Figure 32: Illustrates the geographical distribution of doctors in Malaysia (per 10,000 population).



Source: Ministry of Health (2022)

3.4.2 Recent trends in regional distribution of 5 selected HRH Professions

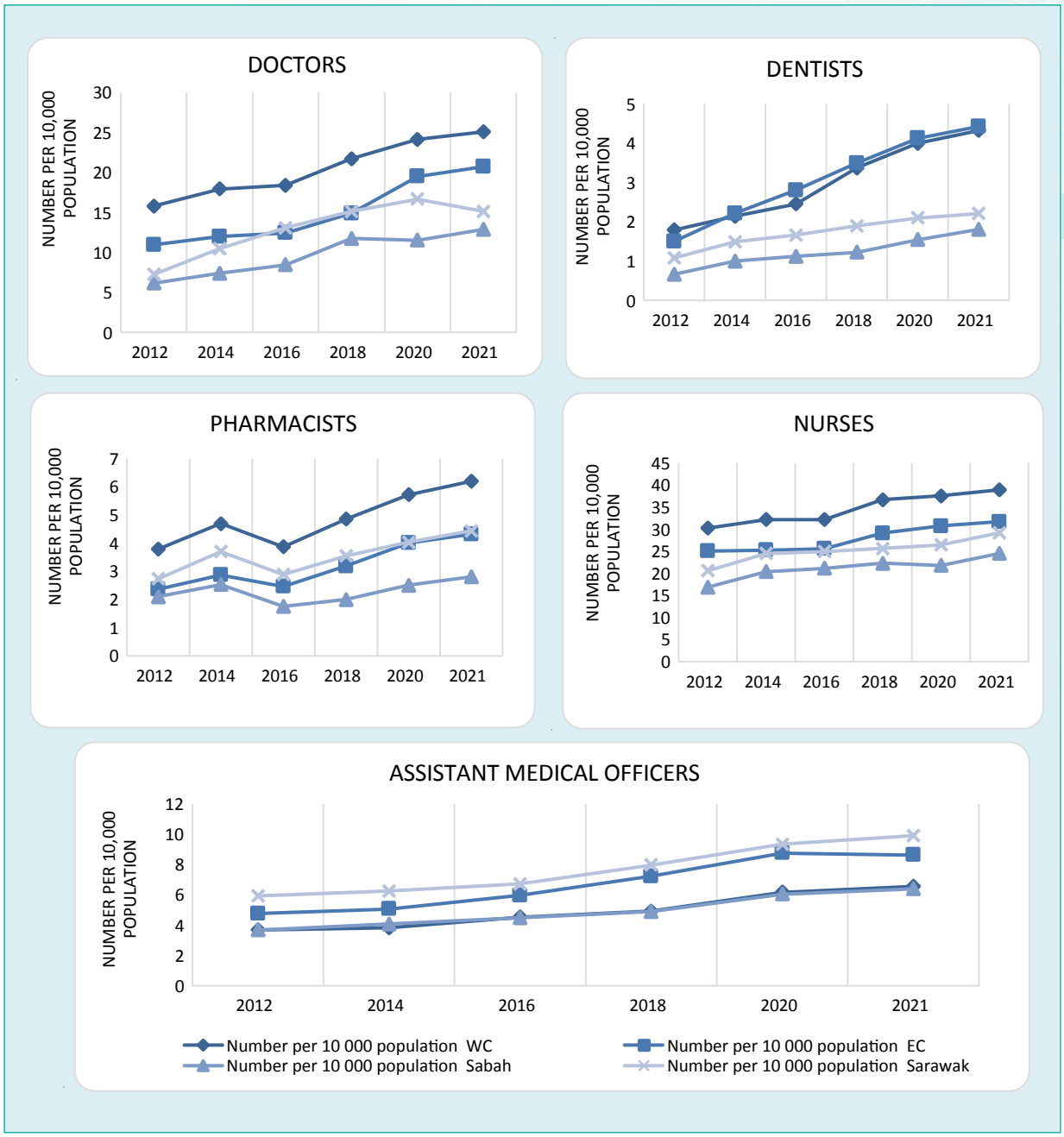
To ensure all levels of society have access to healthcare, the ministry strives for a consistent, fair and balanced distribution of health resources as a part of its continuous and ongoing processes in the regional distribution of human resources for health.

By analysing the trend of socioeconomic progress across all the regions in Malaysia, the major determinants in economic potential and growth are known to greatly influence the development of healthcare facilities and services, including their mode of transportation in ambulating patients. These factors can directly impact the distribution of HRH across states and regions.

Overall, during the period 2012–2021, there was a steady increase in the total number of healthcare personnel, including doctors, dentists, pharmacists, and nurses per 10,000 population in the west coast region.

From the figure below, doctors can be seen increasing steadily in all regions except Sarawak. On the other hand, the expansion of the dentistry workforce on the East Coast exceeded the rate of the dental practitioner growth and distribution on the West Coast since 2014 and onward. Apart from that, the data shows that Assistant Medical Officers are higher in Sarawak and the East Coast compared to West Coast and Sabah.

Figure 33: Trends in Regional Distribution of MOH Healthcare Personnel, 2012–2021



Source: Ministry of Health (2013–2022)

Note: Total number of doctors and pharmacist for 2020 & 2021 not included full registration.

3.5 SKILL MIX

Table 18 shows the skill mix for several key categories over the years from 2011 to 2021. It can be observed that the doctor to nursing personnel ratio increases over the years. However, for the other professions, it can be seen not much changes over the years except for Dental Practitioners to dental technologist ratio which is seen decreasing in trend. Several key categories of healthcare professionals to allied health categories are as shown in Table below.

Table 18: Ratio of Selected Healthcare Professionals to Allied Health Categories

Healthcare Profession	2011	2014	2016	2018	2020	2021
Doctors to nursing personnel ratio	10:20	10:20	10:20	10:17	10:15	10:15
Doctors to AMO ratio	10:30	10:30	10:30	10:30	10:30	10:30
Dental practitioner (MOH) to dental therapist (MOH) ratio	10:60	10:50	10:40	10:30	10:20	10:20
Pharmacist to pharmacy assistant ratio	10.40	10.40	10:50	10:50	10:30	10:30
Dental practitioner to dental technologist ratio (Change to MOH only)	10:40	10:30	10:30	10:10	10:10	10:10
Dental practitioner (MOH) to Surgery Assistants (MOH)	10:16	10:11	10:90	10:70	10:70	10:70

Source: Data from Ministry of Health (2012, 2015, 2017, 2019, 2021, 2022)

KEY MESSAGES

1. T1. The health workforce is predominantly female in most cadres. The implication of this trend in future is "female-friendly" policies such as part-time work, work from home, flexible working hours and availability of childcare facilities close to the workplace, which have been implemented but need to be improved further. Young female workers are of reproductive age; therefore, the system must support them by permitting extended maternity leave without jeopardizing their future careers.

2. The age of the MOH health workforce is predominantly younger. The policy implication of this trend is that their career plans should be considered for promotion, training and opportunities for postgraduate studies.

3. The majority of the healthcare personnel are in the public sector. Among them are doctors, dental practitioner, pharmacists who are performing compulsory service such as housemanship in the public sector. Since 2011, several policy decisions have been amended. These amendments include the reduction in the number of years of compulsory service and the introduction of contract slots for new graduates since 2016.

4. Despite an overall increase in health workers per 10,000 population for every region for most categories, there is an apparent gap between the west coast and other regions, especially in East Malaysia. The exception is made for the dental practitioner; in 2021, the number of dental practitioner on the east coast almost matched the number on the west coast. Besides that, AMOs and dental nurses are seen higher in Sarawak.

5. Despite the increasing number of workers in the healthcare profession, the skill mix between key categories remains unchanged, except for the doctor-to-nurse and dental practitioner-to-dental therapies ratio. The ratio has been seen to reduce over the years. Skill mix is fundamental in terms of strengthening the team approach and in providing holistic access to better healthcare.

4. CLINICAL SPECIALISTS IN MALAYSIA

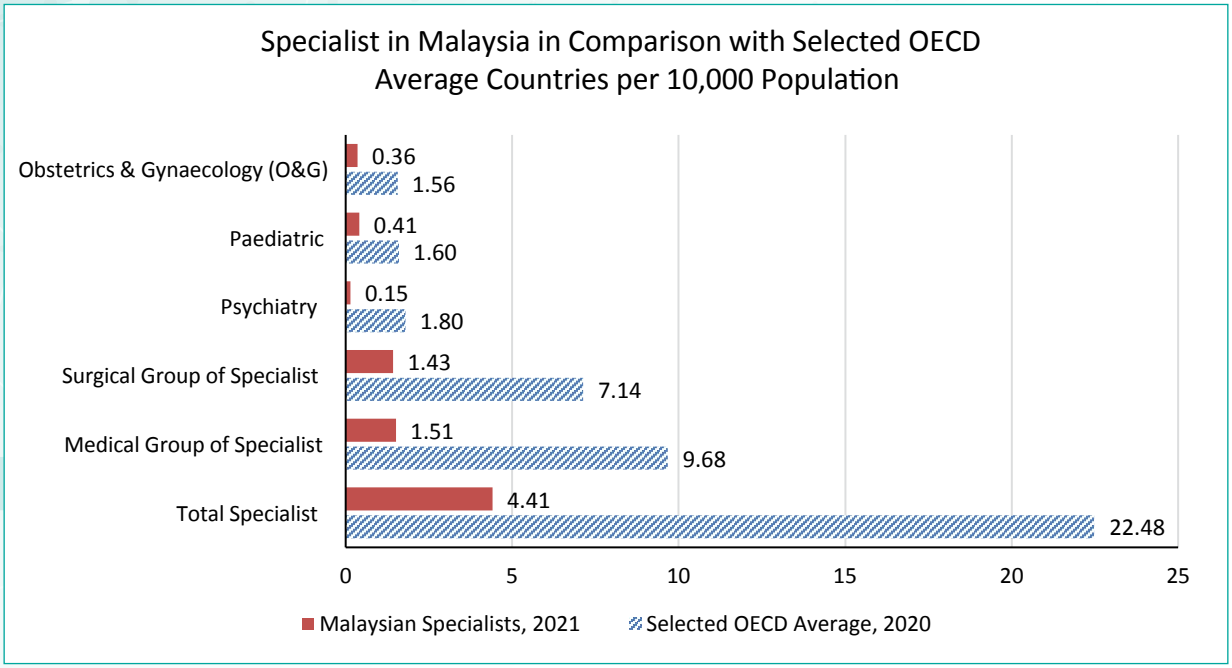
4.1 NUMBER OF CLINICAL SPECIALISTS IN COMPARISON TO HIGH-INCOME COUNTRIES

In 2021, there were 14,393 registered specialists from the national specialist registry. This is equivalent to 4.41 per 1000 population or a ratio of 1 to 2268 population. The Medical Act 1971 (Amendment 2015) was enacted on 1st July 2017, making it mandatory for doctors to be registered with the National Specialist Registry (NSR) in order to practice their respective specialties. The National Specialist Register (NSR), overseen by the Malaysian Medical Council (MMC), is tasked with specialist registration and the management of specialty-related data. The registry collects and retains information regarding all specialists, including their areas of speciality, primary and postgraduate qualifications, as well as their registered practice location.

Malaysia's aspiration to evolve into a high-income nation, accompanied by economic well-being, underscores the significance of a robust healthcare system as a pivotal criterion for evaluating its accomplishments. To this end, benchmarking often draws from numerous examples within OECD countries. Both Table 10 and Figure 26 unveil that, as of 2021, Malaysia's clinical specialist density remains considerably below the average density observed in selected OECD countries based on specialization.

The average specialist density in OECD countries is nearly six times higher than that of Malaysia. In 2021 alone, Malaysia's average stands at 4.41 specialists per 10,000 population, while selected high-income nations boast 22.48 specialists per 10,000 population.

Figure 34: Average Specialist in Malaysia in Comparison with Selected OECD Average Countries per 10,000 Population

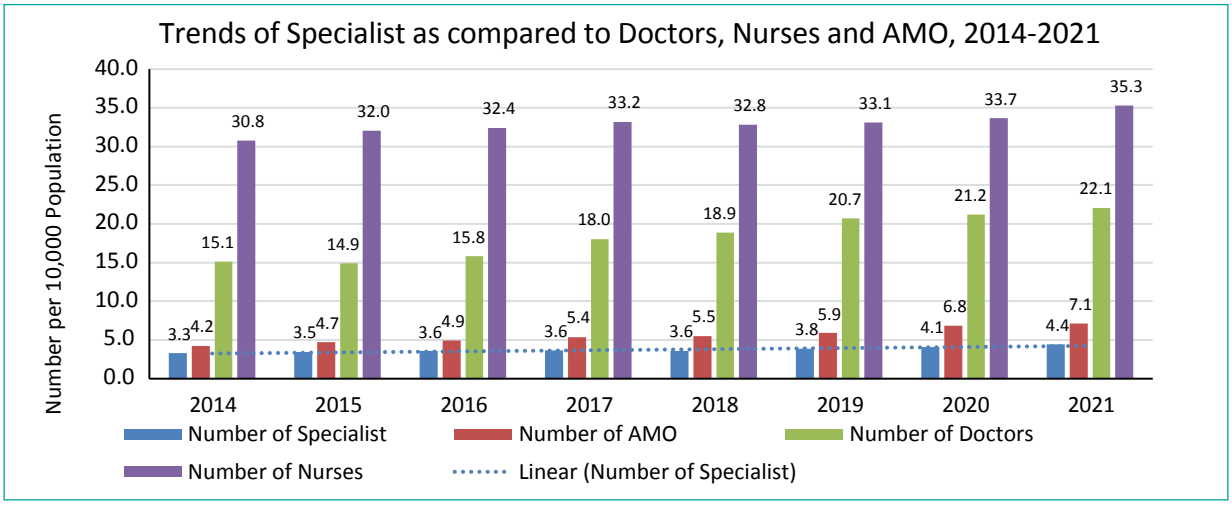


Source: Organisation for Economic Co-operation and Development countries retrieved from https://stats.oecd.org

4.2 TRENDS OF CLINICAL SPECIALISTS IN MALAYSIA

Figure 35 illustrates that there has been a marginal upward trend in the number of specialists in Malaysia over the past eight (8) years. This situation could potentially be attributed to constraints such as limited postgraduate training opportunities provided by local universities, restricted sponsorship quotas for postgraduate studies, and a scarcity of clinical specialties that offer recognized parallel training. However, additional corroborative data regarding this circumstance is not presented within this report.

Figure 35: Trends of Specialists, Doctors, Nurses and AMOs in Malaysia, 2014–2021



Source: Data for AMO, doctor and nurse from Ministry of Health (2014-2022)

Table 19: Growth Rate of Specialists as compared to other profession, 2019–2021

Profession	2019 (per 10,000 population	2021 (per 10,000 population)	Expansion rate from 2019-2021 %
Total Specialist	3.85	4.41	14.5
Doctors	20.74	22.08	6.5
Nurse	33.07	35.29	6.7
AMO	5.90	7.14	21
Pharmacist	4.41	5.35	21.3
Dental Practitioner	3.32	3.85	16

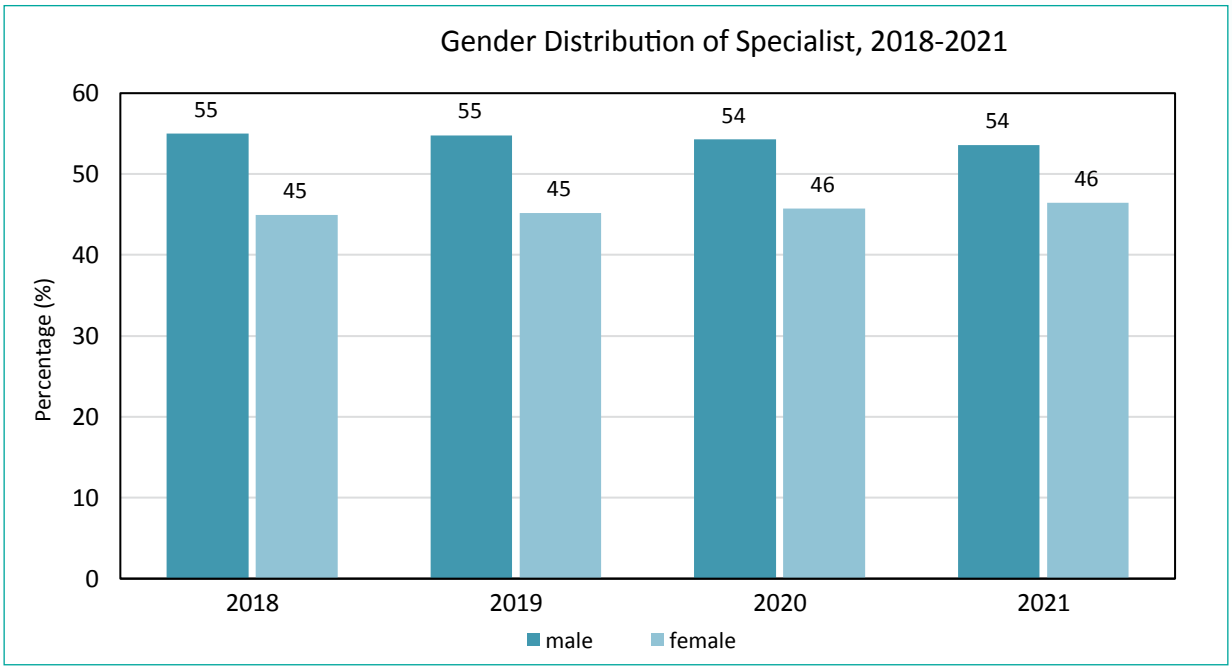
Note: (+) increase, (-) decrease

Table 19 displays the growth rates of various professions, encompassing specialists, between 2019 and 2021. The most substantial rate of expansion is observed among pharmacists, and followed by AMOs. In contrast, doctors and nurses exhibit comparatively modest expansion rates.

4.3 SPECIALISTS GENDER DISTRIBUTION

Figure 36 illustrates a four-year trend from National Specialist Register (NSR) service data which shows that the percentage of male specialists is more compared to female specialists. It can be seen that in the year 2021, there will be 54% of male specialists as compared to 46% of female specialists. However, based on the bigger picture, it can be seen that females make up about 58.6% of the total healthcare workforce. This is based on Figure 25.

Figure 36: Malaysia Specialist Distribution by Gender, 2018–2021



Source: National Specialist Registry (2022)

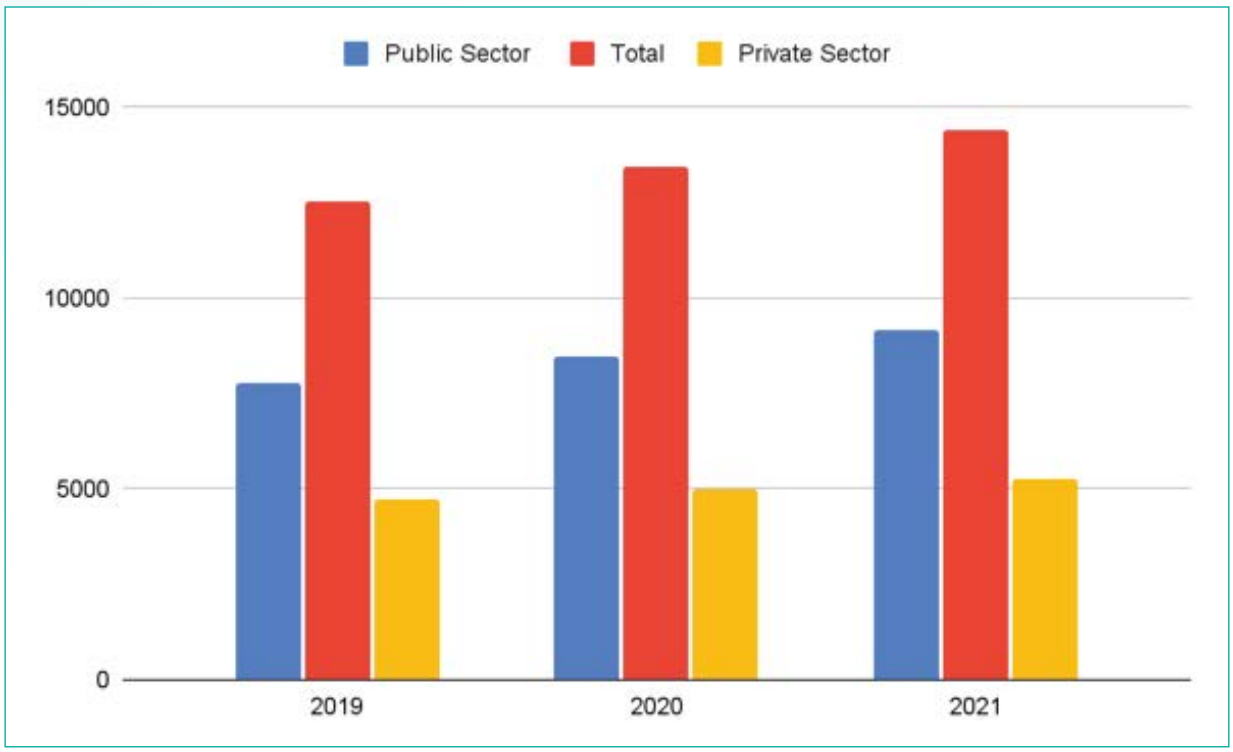
4.4 DISTRIBUTION OF CLINICAL SPECIALISTS IN THE PUBLIC AND PRIVATE SECTORS

Referring to Figure 37, the specialist distribution data highlights a significant trend where a considerable proportion of trained medical personnel in the specialist field practice within public healthcare institutions. The existing mechanism of the ministry's specialist training program has established a framework wherein scholarships for postgraduate studies are annually granted to medical officers employed in public institutions.

Consequently, all specialists who undergo training via this pathway are obligated to serve a predetermined period of time in any public healthcare institution. Additionally, as outlined in Table 7, the majority of the workload and healthcare responsibilities are effectively handled by public healthcare institutions. This situation not only serves as a valuable training environment for junior specialists but also ensures that public institutions maintain a stable and substantial professional workforce.

The significance of this arrangement was distinctly demonstrated during the recent Covid-19 pandemic, underscoring its importance when the nation confronted a critical healthcare crisis.

Figure 37: Specialists Distribution by Sector, 2019–2021



Source: National Specialist Register of The Malaysian Medical Council (2019–2022)

Specialists in Malaysia in 2021 were primarily distributed in the public sector (64%) compared to the private sector (36%). The majority of specialists received scholarships for postgraduate studies or subspecialty training from the government, and they were obligated to serve a contractual period in the public sector. Once gazetted and having completed their public service as specialists, they had the option of moving to the private sector.

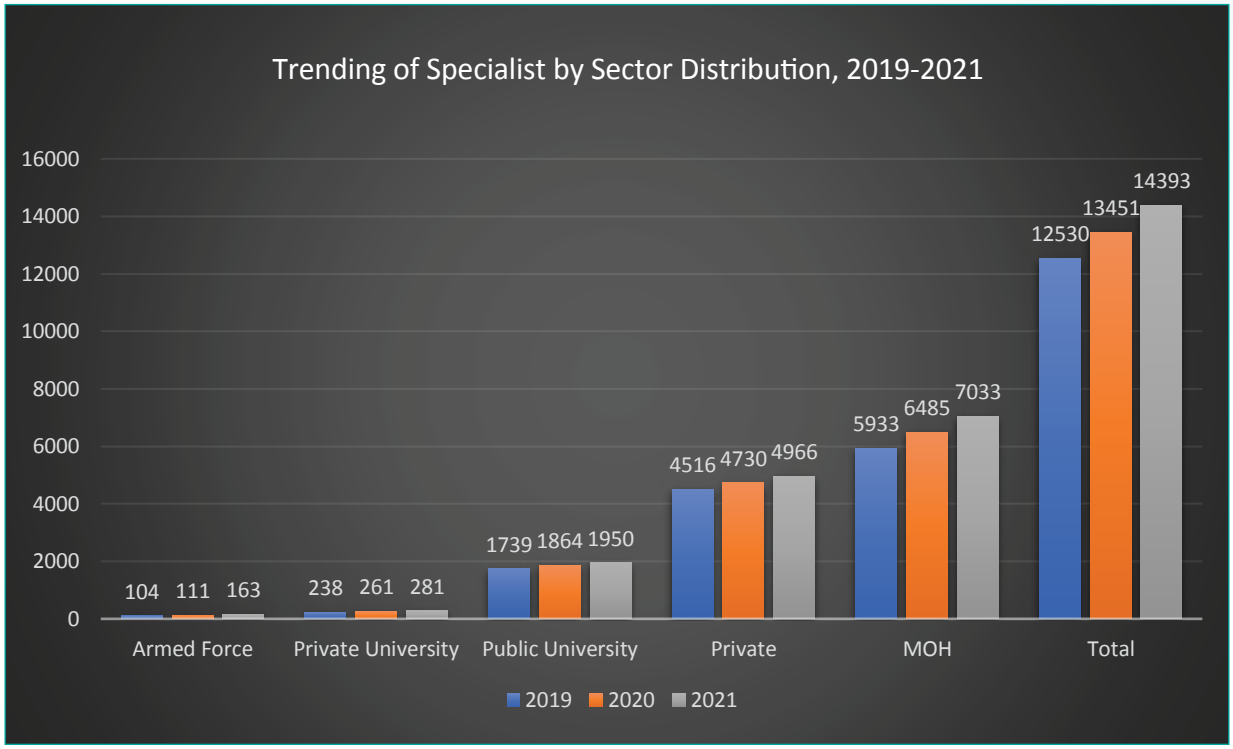
The total number of specialists practicing in the public sector includes those from the Ministry of Health (MOH), the armed forces, and public universities, as indicated in Table 20.

Table 20: Specialist Distribution by Sector, 2019–2021

Sector	2019	2020	2021
Armed Force	104	111	163
Private University	238	261	281
Public University	1739	1864	1950
Private Sector	4516	4730	4966
Ministry of Health (MOH)	5933	6485	7033
Total	**12530**	**13451**	**14393**

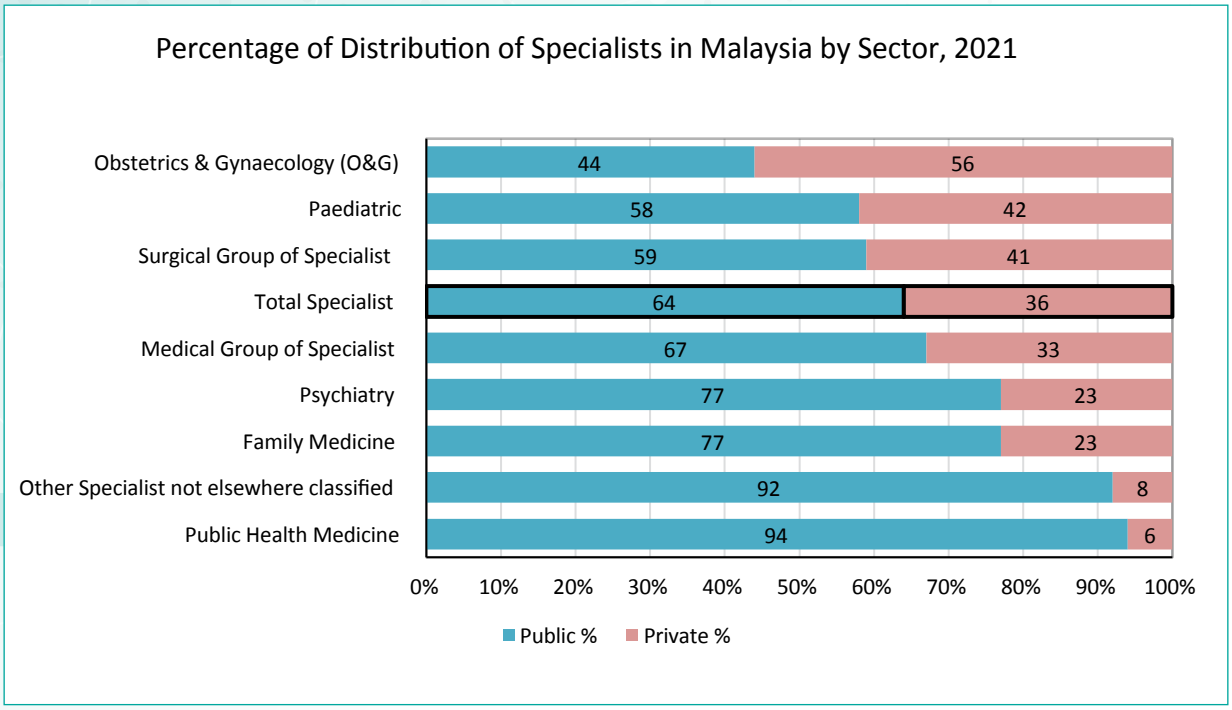
Source: National Specialist Register of The Malaysian Medical Council (2020-2022)

Figure 38: Trending of Specialists by Sector Distribution, 2019–2021



Source: National Specialist Register of The Malaysian Medical Council (2020–2022)

Figure 39: Percentage of Distribution of Specialists by speciality in Malaysia, 2021

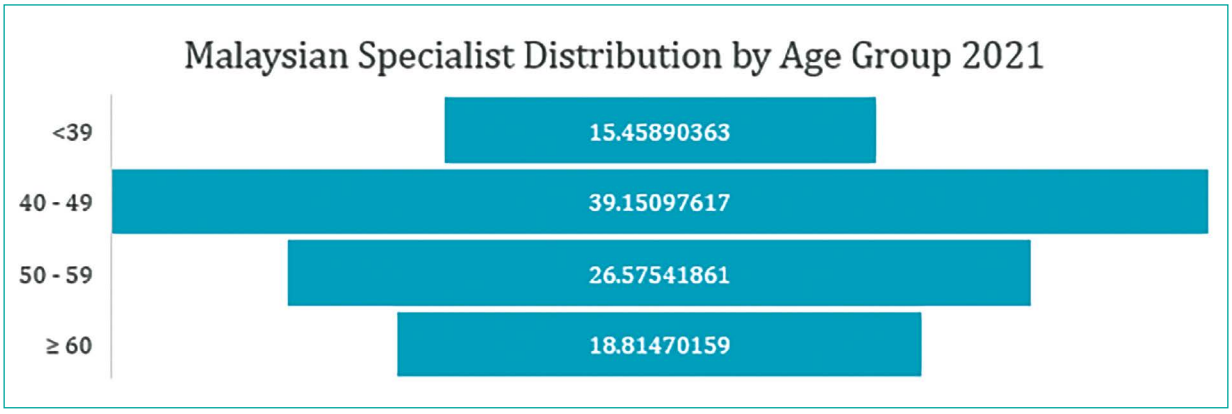


Source: National Specialist Register (2022)

As depicted from the Figure 39, the highest percentage of specialists in the public sector are in Public Health Medicine (94%), Family Medicine (77%), Psychiatry (77%), and Medical Group of Specialists (67%). Also, 92% of specialists not elsewhere classified such as rehabilitation medicine and sports medicine specialist work in the public sector. Among all the specialties, Obstetrics and Gynaecology (O&G) is the only one with a higher proportion of specialists in the private sector (56%) as compared to the public sector (44%).

4.5 SPECIALISTS AGE AND SECTOR DISTRIBUTION

Figure 40: Malaysian Specialist Distribution by Age Group, 2021



Source: National Specialists Registry, 2022

Figure 40 illustrates the distribution of specialists by age group in 2021. Typically, the specialists begin their service before the age of 30 and obtain their postgraduate qualification within the age of 30-39. It is identified that the largest age group of specialists is between

40–49 years old (39%), followed by 50–59 years old (27%), more than 60 years old (19%) and those less than 39 years old (15%).

Table 21 below illustrates the number of specialists who have left the public service in the last four years. The retirement age in the public sector is either 56, 58, or 60 years old; therefore, it is anticipated that specialists will continue practicing in the private sector after that age. It can be seen that the average percentage of specialists resigning is around 3.65%. Additionally, 0.21% of specialists opted for early retirement, and 0.39% of specialists take mandatory retirement each year.

Table 21: Resignation of MOH Specialists, 2017–2020

Year	Number of Specialist in MOH *(Post filled)*	Specialist Resigned	Resigned (%)	Optional Retirement	Optional Retirement (%)	Mandatory Retirement	Mandatory Retirement (%)
2017	4972	180	3.62%	6	0.12%	27	0.54%
2018	5306	198	3.73%	19	0.36%	17	0.32%
2019	5206	229	4.40%	10	0.19%	14	0.27%
2020	5649	161	2.85%	9	0.16%	24	0.42%
2021	6258	134	2.14%	2	0.03%	17	0.27%
Average			**3.65%**	**-**	**0.21%**	**-**	**0.39%**

Source: Human Resource Division, 2022 (Unpublished)

Note: Total number of specialists in MOH differs from NSR data due to different sources and different way of data collection.

KEY MESSAGES

1. In 2021, statistics showed females making up more than half of the total size of the workforce. However, in sector-to-sector comparison, male specialists form a bigger workforce representing skilled labour in human resources for health.

2. As for sector distribution, most specialists served in the public sector, except for the Obstetrics & Gynaecology speciality, where about 56% are in the private sector.

3. Both the public and private sectors show an increasing number of specialists year over year. However, the public sector remains the leader in specialist production as the public sector is the mainly the specialist powerhouse for the nation.

4. Although the public sector can provide the means to train and produce more specialists, the percentage of resigning specialists from the public sector (MOH) is consistently higher than the percentage from optional and mandatory retirements.

5. HEALTH PROFESSION EDUCATION

5.1 TRAINING INSTITUTIONS AND TRAINING PROGRAMMES FOR HRH

Several transformation ideas in the healthcare education system have been implemented especially in the higher education sector in Malaysia. The most notable one being the increase in the number of undergraduate medical programmes established by private universities or colleges to achieve the ratio of 1:400 medical doctors to population by 2045. It led to an increasing production of medical students since 2016.

In maintaining a healthy production and sustaining good qualities of HRH professionals, investment in education has become crucial to ensure a good standard of graduates who enter the healthcare system.

This chapter describes HRH training institutions, basic education programmes for HRH, and other information relevant to HRH education in the country.

Table 26 shows the number of training institutions for HRH and Table 16 shows the basic HRH-related education programmes provided by the Ministry of Education.

Table 22: Number of Training Institutions for Health Workforce in Malaysia, 2020/2021

Program	Public		Private				All
	Public colleges	Public universities	Private colleges	Private universities	University College	Foreign Branch Campus	
Medicine	0	11	6	15	5	3	40
Dental Practitioner	0	6	1	4	2	0	13
Pharmacy	0	6	0	10	3	2	21
*Nursing	14	11	27	10	6	0	68
*Midwifery	14	2	3	2	0	0	21
Assistant Medical Officer	6	4	7	7	3	0	27
Pharmacy Assistant	2	1	6	3	5	0	17
Dental Therapist (Nurse)	1	0	0	0	0	0	1
Dental Technologist	1	0	0	0	0	0	1
Dental Surgery Assistant	1	0	0	0	0	0	1
T&CM	0	0	0	0	0	0	0
Other Allied Health	See Annex 3						

Source: Ministry of Higher Education (2022), *Malaysia Nursing Board

Table 23: Basic Education Programmes Health Workforce in Malaysia, 2020/2021

Program	Public				Private				Total
	Certificate	Diploma	Degree	Sub-Total	Certificate	Diploma	Degree	Sub-Total	
Medicine	0	0	14	**14**	0	6	30	36	50
Dental Practitioner	0	0	6	6	0	2	8	10	16
Pharmacy	0	0	6	6	0	0	15	15	21
Pharmacy Assistant	0	2	0	2	0	0	0	0	2
Nursing	11	19	6	36	37	22	22	81	117
Midwifery	11	13	0	24	0	0	0	0	24
Assistant Medical Officer	0	6	0	6	0	13	3	16	22
Dental Therapist (Nurse)	0	1	0	1	0	0	0	0	1
Dental Technologist	0	1	0	1	0	0	0	0	1
Dental Surgery Assistant	1	0	0	1	0	0	0	0	1
T&CM	0	0	0	0	0	0	0	0	0

Source: Ministry of Higher Education (2022)

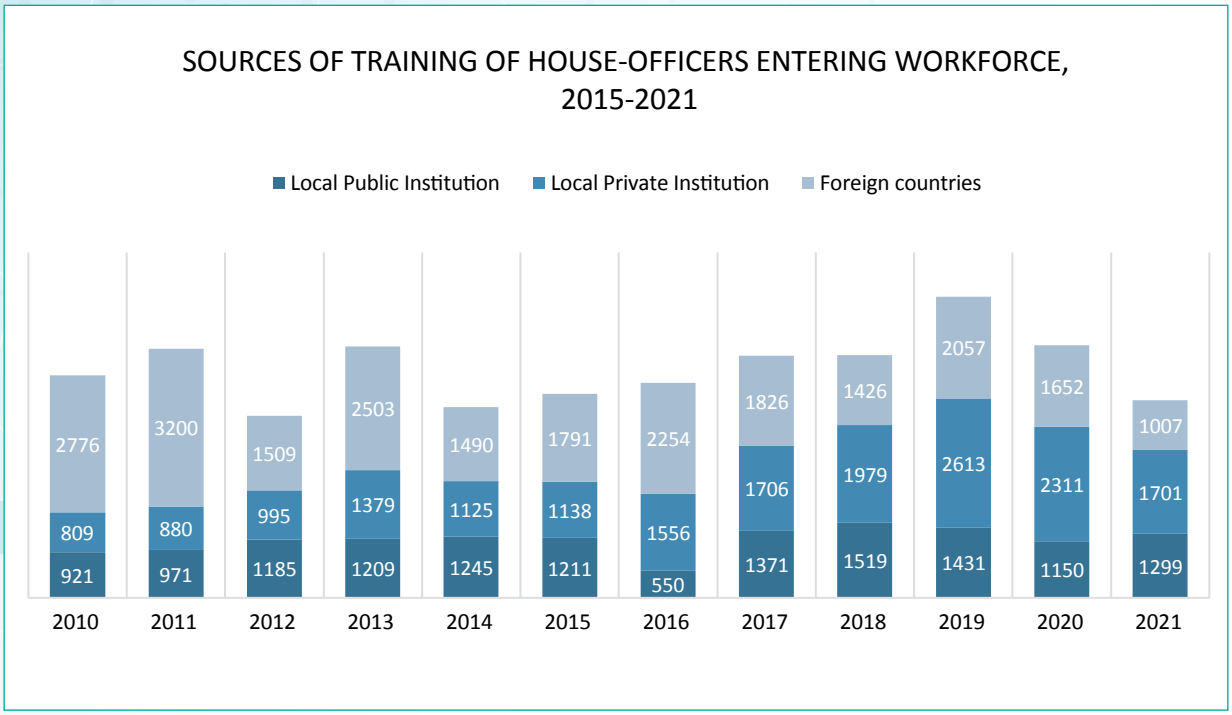
5.2 TRAINING PROVIDER OF DOCTORS AND DENTAL PRACTITIONERS ENTERING HEALTH WORKFORCEE

5.2.1 Doctors

From 2015 to 2019, there was a steady increase in the number of the new medical graduates joining the workforce annually, likely due to the increase in the number of local medical schools such as CUCMS, USIM, UTAR, MAHSA as well as the availability of affordable accredited medical training programmes in foreign countries. Although the number of locally trained medical graduates has increased, the proportion of the doctors in public and private universities have not changed much, in comparison to those trained in foreign countries (Figure 41).

However, the number declined in the subsequent years of 2020 and 2021 (Figure 41). It can be explained by the effect of the implementation of moratorium for medical program on 2011 to 2016, in which a restriction was put in place on new medical programmes and the quota of medical student in local universities. Furthermore, the progress of teaching and learning in universities might be affected by COVID-19 pandemic, which resulted in delay of graduation of medical students during the particular period.

Figure 41: Sources of Training of House-Officers Entering Workforce, 2015–2021



Source: Human Resource Division (2022)

Table 24: Local Trained Medical Graduates (Public and Private), 2012–2021

No.	University	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
1	UM	188	198	197	176	7	185	196	169	132	130
2	UKM	259	220	208	263	13	248	276	225	233	151
3	USM	193	193	205	222	16	278	242	280	89	215
4	UNIMAS	74	39	92	107	14	123	104	116	125	110
5	UMS	70	80	81	6	81	103	97	86	73	93
6	UPM	111	143	99	110	16	144	130	115	103	86
7	PMC	97	150	115	117	76	67	142	117	83	8
8	UIAM	108	96	128	16	121	141	145	138	145	142
9	IMU	231	183	136	98	147	189	128	46	185	137
10	RCMP	19	136	119	83	160	147	19	129	141	97
11	MMMC	249	258	117	252	245	202	362	454	297	226
12	UiTM	148	178	184	225	200	55	223	224	156	231
13	AIMST	108	205	14	194	206	201	170	183	197	205
14	AUCMS	69	58	89	0	0	0	0	0	0	0

No.	University	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
15	MONASH UNIVERSITY	10	71	76	99	100	74	86	103	47	64
16	UCSI	41	50	32	26	8	62	78	53	63	44
17	CUCMS	133	126	143	3	160	118	137	213	149	107
18	USIM	34	62	53	58	29	31	50	68	89	80
19	MSU	38	142	186	198	208	306	238	252	192	166
20	NUMED	0	0	0	35	34	6	70	72	90	47
21	UNISZA	0	0	0	28	53	63	56	10	5	61
22	UTAR	0	0	0	24	43	5	42	36	43	75
23	MAHSA UIVERSITY	0	0	98	9	116	129	147	226	189	141
24	TAYLORS UNIVERSITY	0	0	0	0	15	54	37	82	92	142
25	SEGI UNIVERSITY	0	0	0	0	38	59	64	63	102	64
26	UPNM	0	0	0	0	0	9	19	12	23	18
27	Perdana University	0	0	0	0	0	68	72	76	0	3
28	Lincoln University College	0	0	0	0	0	10	68	57	62	55
29	Others	0	0	0	0	0	0	0	439	356	102

Source: Human Resource Division (2022)

Table 25: Foreign-Trained Medical Graduates, 2012–2021

No	COUNTRY	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
1	India	64	45	90	117	149	123	55	9	6	0
2	Australia	59	99	39	38	21	14	6	8	13	23
3	Egypt	51	460	353	826	980	648	381	5	13	8
4	Bangladesh	1	0	2	3	8	8	7	143	79	22
5	Pakistan	3	3	1	0	2	0	0	344	234	107
6	Indonesia	571	785	528	410	275	305	207	124	67	137
7	Taiwan	6	6	3	1	2	2	1	0	0	0
8	China	14	20	12	7	11	15	6	1	0	0
9	New Zealand	9	23	18	11	4	0	0	784	763	350
10	Japan	2	0	0	0	0	0	0	1	4	1
11	United Kingdom	59	101	47	34	55	37	44	0	0	0
12	Canada	2	1	0	1	1	0	2	361	293	210
13	Ireland	88	79	67	26	123	118	188	2	3	2
14	Russia	372	383	255	221	433	420	380	0	0	0
15	Ukraine	23	18	8	7	2	0	0	36	17	15
16	Others	185	480	67	89	188	128	149	239	160	69
Total		**1563**	**2409**	**1490**	**1791**	**2254**	**1826**	**1426**	**2057**	**1652**	**1007**

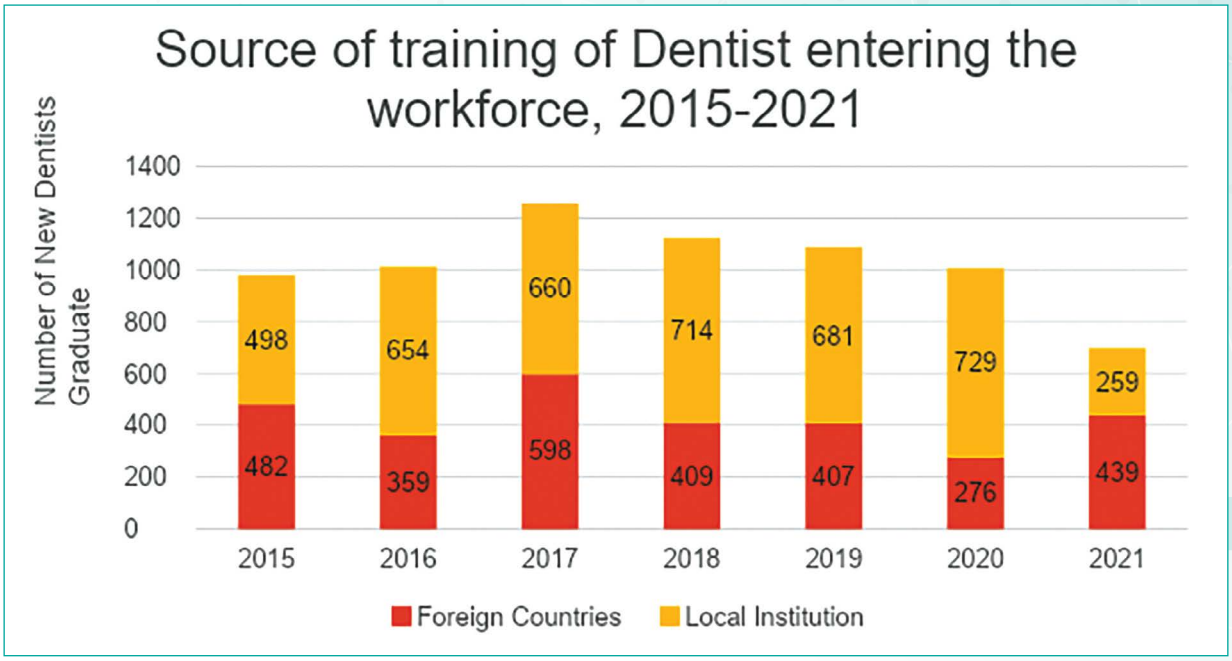
Source: Human Resource Division (2022)

In 2021, about 25.1% of graduates were trained overseas in more than 15 different countries with the largest contributors being New Zealand (350 graduates), Canada (210 graduates) and Indonesia (137 graduates).

5.2.2 Dental Practitioners

In 2021, 63.0% of the dental practitioner who entered the workforce were trained in foreign countries (Figure 42). This represents a drastic increase from 27.0% of foreign-trained dental practitioner who joined the workforce in 2020.

Figure 42: Source of Training of Dental Practitioner Entering the Workforce, 2015–2021



Source: Malaysian Dental Council (2022)

5.3 POSTGRADUATE TRAINING IN PUBLIC SECTOR UNIVERSITIES IN MALAYSIA: DOCTORS, DENTAL PRACTITIONER, AND PHARMACISTS.

The postgraduate training pathway for doctors and dental practitioner require at least four years of training, (equivalent to a master's Programme). It is a pre-requisite to becoming a specialist. Most of the specialty trainings are available at the local universities. Some training programmes are also made in collaboration with other foreign institutions, most commonly with the Royal Colleges of United Kingdom. Within this report, most of the data on the production of postgraduate specialists are extracted from the Malaysian public universities. Figure 43 shows the number of doctors, dental practitioner, and pharmacists who completed post graduate training during 2015-2021.

Figure 43: Doctors, Dental Practitioner and Pharmacists Completed Postgraduate Training in Malaysian Public Universities, 2015–2021

Source: Ministry of Education (2020)

5.4 POST-GRADUATE TRAINING OF DOCTORS EMPLOYED BY MOH

Table 26 provides detailed breakdown on the number of clinical specialists who obtained their postgraduate qualification in the selected specialties either via Master Programme in local universities (MMED) or Parallel Pathway between 2014 and 2021.

Table 26: Number of MOH Clinical Specialist Who Obtained Postgraduate Qualification in Five Disciplines through Master Programme and 'Parallel Pathway', 2014–2021

Speciality	Qualification	2014	2015	2016	2017	2018	2019	2020	2021
Internal Medicine	MRCP	57	57	112	137	172	170	164	47
	MMED	22	33	43	34	41	60	43	61
Paediatric	MRCPCH	25	21	15	60	40	65	18	4
	MMED	13	26	24	34	27	29	22	50
O&G	MRCOG	8	4	1	20	26	19	1	0
	MMED	23	30	29	23	33	46	41	45
Oncology	FRCR	-	-	-	-	-	0	0	1
	MMED	1	4	5	6	6	7	4	13
Surgery	FRCS	-	-	-	-	-	0	0	0
	MMED	25	53	42	41	52	41	56	54
Anaesthesia	FCAI	-	-	-	-	-	0	0	1
	MMED	85	50	64	62	51	69	111	91
Total		**259**	**278**	**335**	**417**	**448**	**506**	**460**	**367**

Source: Medical Development Division (2022)

**Note: There is no parallel pathway programme for General Surgery. The FANZCA programme is not recognised as part of the parallel pathway in Malaysia.*

6. CONCLUSION / CONCLUDING REMAKRS

Malaysia is going through significant challenges in the healthcare delivery mechanism and ecosystem. The recent unprecedented turn of events such as the COVID-19 pandemic and contract appointment policy have indicated the need for major healthcare reforms to establish a more reliable and resilient national healthcare system. To accomplish such goals, comprehensive human resource management is instrumental in healthcare reforms. Thus, this report represents the first step towards the goal by collecting and collating all the relevant data and analysis.

Since recovering from the Asian financial crisis in 1997-1998, Malaysia has exhibited an upward trajectory in many of its socioeconomic indicators. As a result of the spill over of the economy positively affected the health system outcomes, many Malaysians are able to enjoy affordable and good healthcare quality which are reflected in many indicators such as the mortality, life expectancy and live birth rates. However, as the issues of growing disease burden, ageing population and rising healthcare costs gain the upper hand, the rationale for joint directives becomes significantly important in designing and implementing health reform policy.

The authors of this report strongly believe that the accumulation and compilation of accurate past and present data on the trends of human resource indicators can be used as a good leverage in designing future health policy. Understanding the workforce size, distribution, type of skills, and regional demands are particularly important in establishing the foundation to a more holistic health policy. On the other hand, the data presented in this report may indirectly suggest explanations to fundamental issues related to the health workforce size ratio to populations, specialty expansions, and redistribution of workforce based on regional needs and demands.

The data recorded in the report may have suggested some of the major challenges faced by the human resource for healthcare sector in the country, such as rapid increase of new entrants into the workforce, distribution issue in the attempts of maintaining the allocative efficiency, and the needs to pursue technical upper hands both by facility and highly skilled workforce. These are some, if not all of the human resource challenges that continue to be the main topic of discussion in HRH.

All in all, a health system will always encounter the matters that would limit its capability, but the solutions are often always involved in the process of acquiring adequate and well-trained healthcare manpower. On top of that, to achieve Sustainable Development Goals (SDG) will require attention to be focused on health service coverage especially on availability, accessibility and quality which are highly critical in ensuring a good delivery system for equal healthcare to all. Therefore, this report serves to demonstrate a scenario analysis of Human Resource in Malaysian healthcare in order for the policy makers to judge, analyse and further make sensible policy planning and decision for the future. It also serves as an exercise to better prepare the baseline data required for the National Health Workforce Account (NHWA).

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GLOSSARY

TERM	DEFINITION
Nurses	Individuals who have successfully completed accredited basic nursing courses at diploma or degree and have been placed on the Nursing Register with the Malaysian Nursing Board. 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 Nursing Register with the Malaysian Nursing Board. Midwifery for normal deliveries is part of the basic educational programme
Assistant Nurses	Individuals who have successfully completed a two-year accredited nursing course at certificate level and been place in Nursing Register with the Malaysian Nursing Board.
Professionally active nurses	Professionally active nurses include practising nurses and other nurses for whom their education is a prerequisite for the execution of the job. **Inclusion** • Professional nurses (see definition below) • Associate professional nurses (see definition below) • Nurses providing services directly to patients • Nurses working in administration, management, research and in other posts excluding direct contact with patients **Exclusion** • Nurses who hold a post / job under which nursing education is not required - Unemployed nurses and retired nurses • Nurses working abroad This definition was obtained from OECD Stats, website.
Midwives	Registered Nurses who have successfully completed an accredited post-basic education programme in Midwifery and are registered in Part 1 of the Nursing Register. Midwives also include all Community Nurses who have successfully completed basic education programmes for Community Nursing which includes midwifery for normal childbirth. Such individuals are placed in Part 2 of the Nursing Register.

TERM	DEFINITION
Physicians licensed to practice	Physicians licensed to practise include practising and other (non-practising) physicians who are registered and entitled to practice as health care professionals. **Inclusion** • Physicians who provide services for individual patients • Physicians for whom their medical education is a prerequisite for the execution of the job • Physicians for whom their medical education is NOT a prerequisite for the execution of the job • Physicians licensed to practice but who due to various reasons are not economically active (e.g. unemployed or retired) • Physicians working abroad **Exclusion** - Dental Practitioner, stomatologists, dental and maxillofacial surgeons This definition was obtained from OECD Stats, website.
Professionally active physicians	Professionally active physicians include practising physicians and other physicians for whom their medical education is a prerequisite for the execution of the job. **Inclusion** • Physicians who provide services for individual patients • Physicians working in administration and management positions requiring a medical education • Physicians conducting research into human disorders and illness and preventive and curative methods • Physicians participating in the development and implementation of health promotion and public health laws and regulations • Physicians preparing scientific papers and reports **Exclusion** • Dental practitioner, stomatologists, dental and maxillofacial surgeons • Physicians who hold a post / job under which medical education is not required • Unemployed physicians and retired physicians • Physician working abroad This definition was obtained from OECD Stats, website.

TERM	DEFINITION
Practising physicians	**Inclusion** • Practising physicians who have completed studies in medicine at university level (granted by adequate diploma) and who are licensed to practice. • Interns and resident physicians (with adequate diploma and providing services under supervision of other medical doctors during their postgraduate internship or residency in a healthcare facility) • Salaried and self-employed physicians delivering services irrespectively of the place of service provision • Foreign physicians licensed to practise and actively practising in the country • All physicians providing services for patients, including radiology, pathology, microbiology,haematology, hygiene. **Exclusion** • Students who have not yet graduated • Dental Practitioner, stomatologists, dental and maxillofacial surgeons • Physicians working in administration, research and in other posts that exclude direct contact with patients • Unemployed physicians and retired physicians • Physicians working abroad This definition was obtained from OECD Stats, website.
Doctors	Medical practitioners who have successfully completed an accredited basic medical education programme, have successfully completed training as a trainee medical officer, and have been placed on the Medical Register as “Fully Registered”. It includes those who are serving the initial two-year compulsory posting (house officer) in a public sector institution. The registration of doctors shall be with the Malaysian Medical Council.
House-Officers	Medical graduates who have successfully completed accredited basic medical education programmes and are undergoing training as a trainee medical officer in a recognised institution. Most have been placed on the Medical Register as “Provisionally Register” with the Malaysian Medical Council.

TERM	DEFINITION
Dental Practitioner licensed to practice	Dental Practitioner licensed to practice include practising and other (non-practising) dental Practitioner, who are registered and entitled to practice as health care professionals in the field of dentistry. They include stomatologists, dental and maxillofacial surgeons. **Inclusion** • Dental Practitioner who provide services for patients • Other dental practitioner for whom their education in dental practitioner / stomatology is a prerequisite for the execution of the job • Other dental practitioner for whom their education in dental practitioner / stomatology is **NOT** a prerequisite for the execution of the job • dental practitioner registered as health care professionals and licensed to practice but who are not economically active (e.g. unemployed or retired) • dental practitioner working abroad This definition was adopted from OECD Stats, website.
Dental Practitioner also known as Dental Practitioner/ Dental Officer / Dental Surgeon	Individuals who have successfully completed an accredited basic dental education programme and have been placed on the Dental Register in according to the Dental Act 1971. It includes individuals who are undergoing the two-year compulsory posting in a public facility.
Specialist Medical	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.
Dental Specialist	Individuals who have successfully completed defined post graduate education programmes in defined specialties, and successfully completed defined periods of experience, demonstrable competency and gazetted as dental specialist in the specialty.
Pharmacists licensed to practice	Pharmacists licensed to practice include practising and other (non-practising) pharmacists who are registered and entitled to practice. **Inclusion** • Pharmacists who provide services for patients • Pharmacists for whom their pharmacy education is a prerequisite for the execution of the job • Pharmacists for whom their pharmacy education is NOT a prerequisite for the execution of the job • Pharmacists licensed to practice but who are not economically active (e.g. unemployed or retired) • Pharmacists working abroad This definition was adopted from OECD Stats, website
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.

TERM	DEFINITION
Assistant Medical Officer	This category was formerly known 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.
Physiotherapists	Physiotherapists assess, plan and implement rehabilitative programs that improve or restore human motor functions, maximize movement ability, relieve pain syndromes, and treat or prevent physical challenges associated with injuries, diseases and other impairments. They apply a broad range of physical therapies and techniques such as movement, ultrasound, heating, laser and other techniques. **Inclusion** • Geriatric physical therapist • Paediatric physical therapist • Orthopaedic physical therapist • Physiotherapist **Exclusion** • Podiatrist • Occupational therapist • Acupressure therapist • Hydrotherapist • Massage therapist • Physiotherapy technician • Shiatsu therapist • Chiropractor • Osteopath This definition was adopted from OECD Stats, website.
Dental Nurse / Dental Therapist	Individuals who have successfully completed the basic education programme for dental nurses / dental therapists. Currently all of them are employed only in public sector.
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 Analyst 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.

TERM	DEFINITION
Optician	Opticians 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	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
Health Facts	An annual publication produces by IDS. It provides concise information on key health indicators. Reports for the period 2000-2012 are available online.
Monitoring Indicator 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 . It maintains a computerised register of medical practitioners.
Malaysian Dental Council	This is a statutory body formed under the Dental Act 1971. It has members from the public and private sectors, and is chaired by the Director General of Health . It maintains a manual and electronic 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 public and private sectors, is chaired by the Director General of Health and the secretariat is in the Pharmacy Practice and 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 that 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 Qualification Agency	An agency established on 1 November 2007 with the coming in force of the Malaysian Qualifications Agency Act 2007 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 MOH).

TERM	DEFINITION
Malaysian Optical Council	This is a statutory body formed under the Optical Act 1991. It has members from the public and private sector 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 Analyst Council	Malaysian Food Analysts Council is a statutory body formed under the Food Analysts Act 2011. It has members from public and private sectors, and is chaired by Director General of Health. It registers the food analysts and regulate the practice.
Medical group specialty	A medical group of specialties as defined in OECD (2019). The list of specialities includes: i. Internal Medicine ii. Nuclear Medicine iii. Rehabilitation Medicine iv. Sports Medicine v. Clinical Oncology vi. Radiation Oncology vii. Clinical Radiology viii. General Paediatrics ix. General Pathology x. Anatomical Pathology xi. Chemical Pathology xii. Haematology xiii. Medical Microbiology xiv. Forensic Pathology xv. Transfusion Medicine xvi. Psychiatry xvii. Public Health Medicine xviii. Obstetrics and Gynaecology (O&G) xix. General Surgery xx. Cardiothoracic Surgery xxi. Neurosurgery xxii. Paediatric Surgery xxiii. Plastic Surgery xxiv. Ophthalmology xxv. Otorhinolaryngology Note: Otorhinolaryngology is a medical group specialty as specified in the OECD (2019) This definition was adopted from OECD Stats, website.
Specialist / Specialist doctor	Fully registered medical practitioner who has registered with the National Specialist Register. Exclude: • Specialists who failed to renew annual practicing certificate for the specified year dental specialist

TERM	DEFINITION
Surgical group specialty	A surgical group of specialties as defined in OECD (2019). The list of specialities includes: i. Anaesthesiology and Critical Care ii. Cardiothoracic Surgery iii. Emergency Medicine iv. General Surgery v. Neurosurgery vi. Ophthalmology vii. Orthopaedic Surgery viii. Otorhinolaryngology ix. Paediatric Surgery x. Plastic Surgery xi. Urology
Other specialities not elsewhere classified	Other group of specialties as defined in OECD (2019). The list of specialities includes: i. Rehabilitation Medicine Sports Medicine This definition was adopted from OECD Stats, website.
Adult Mortality Rate	Adult mortality rate represents the probability that a 15-year-old person will die before reaching his/her 60th birthday, if subject to age-specific mortality rates between those ages for the specified year. Globally, adult mortality rate was 142 per 1000 population in 2016. Adult mortality is highest in low-income countries, and lowest in high-income countries. Disease burden from non-communicable diseases among adults - the most economically productive age span – is rapidly increasing in developing countries due to ageing and health transitions. Therefore, the level of adult mortality is becoming an important indicator for the comprehensive assessment of the mortality pattern in a population.

Source: Respective Divisions and reproduced from HRH Country Profile, 2015–2018

ANNEXES

ANNEX 1: INTERNATIONAL COMPARISON

Table 27: Number and average per 1,000 population for Professionally Active Professions in OECD Countries, in 2020

OECD Countries	Physician	Dentist	Pharmacists	Nurses	Physiotherapist
Australia	4.72	0.72	1.28	13.41	1.09
Austria				10.86	1.59
Belgium	6.11	1.11	1.99		2.09
Canada	2.91	0.65	1.16	10.99	0.67
Chile	2.79	1.37	0.6		1.73
Columbia				1.53	0.69
Czech Republic	5.29				0.88
Denmark	..				
Estonia	5.24	1.41	1.14		0.42
Finland	4.33	0.98	2.01		
France				11.31	1.35
Germany	6.43	1.22	1.09	14.02	2.34
Greece	6.2	1.28			
Hungary	6.01	1.11	1.38		0.6
Iceland	8.22	1.2	1.88	15.63	1.77
Ireland	4.98	0.66	1.36		0.93
Italy	7.11	1.07	1.67	6.6	1.19
Japan				12.85	
Korea	3	0.62	1.45		0.84
Latvia	4.82	0.95	1.17	4.19	0.48
Lithuania	4.94	1.37	1.25	7.84	1.11
Luxembourg	..				
Netherlands	4.08	0.62	0.33		1.94
New Zealand	3.46		0.98	11.33	1.14
Norway	6.79	1.43	1.37	21.19	2.5
Poland	..		0.96		0.83
Portugal	5.49	1.13		7.28	
Slovak Republic				5.79	1.37
Slovenia				10.63	0.74
Spain	5.83	0.84	1.62	6.31	1.26
Sweden	7.07	1.78	1.61		
Turkiye				2.73	0.08
United Kingdom	3.98				0.47
United States	..			11.83	0.67
Average OECD	5.21	1.09	1.3	9.62	1.09
Malaysia	2.27	0.355	0.59	3.37	0.05

Table 28: Number and average per 1,000 population for Selected Specialists by categories in OECD Countries, in 2020

OECD Countries in 2020	Medical Group Specialists	Surgical Specialists	General Paediatricians	Obstetricians & Gynaecologists	Psychiatrists
Australia	0.6	0.69	0.1	0.09	0.18
Austria	1.24	1.11	0.17	0.23	0.21
Belgium	0.91	0.63	0.14	0.13	0.17
Canada	0.66	0.42	0.1	0.08	0.17
Chile	0.5	0.51	0.12	0.12	0.11
Colombia	0.19	0.2	0.08	0.05	0.02
Czech Republic	1.58	1.1	0.14	0.3	0.15
Denmark	..	..	..	..	..
Estonia	1.25	0.85	0.11	0.24	0.2
Finland	0.87	0.61	0.13	0.14	0.25
France	0.78	0.48	0.13	0.12	0.23
Germany	1.46	1.24	0.18	0.26	0.28
Greece	..	..	..	..	..
Hungary	1.21	0.67	0.22	0.14	0.14
Iceland	1.09	0.75	0.04	0.16	0.2
Ireland	0.68	0.49	0.1	0.08	0.21
Israel	1.04	0.66	0.24	0.21	0.16
Italy	1.49	0.99	0.28	0.2	0.18
Korea	0.68	0.69	0.14	0.11	0.13
Latvia	1.06	0.72	0.13	0.12	0.08
Lithuania	1.6	1.13	0.12	0.19	0.15
Luxembourg	..	..	0.23	0.24	0.25
Mexico	0.8	0.16	..	..	..
Netherlands	0.95	0.43	0.15	0.17	0.01
New Zealand	0.84	0.83	0.11	0.1	0.25
Norway	0.89	0.59	0.15	0.12	0.2
Poland	..	..	0.18	0.13	0.26
Portugal	1.28	0.79	..	..	..
Slovenia	1.11	0.73	0.21	0.18	0.14
Spain	1.13	1.01	0.32	0.18	0.16
Sweden	..	..	0.27	0.12	0.12
Switzerland	0.81	0.85	..	..	..
Türkiye	0.58	0.48	0.23	0.23	0.53
United Kingdom	0.78	0.9	0.11	0.1	0.06
United States	..	..	0.17	0.13	0.19
Average OECD	0.97	0.71	0.16	0.16	0.18
Malaysia (2021)	**0.51**	**0.14**	**0.04**	**0.04**	**0.02**

Source: OECD.stats (derived from website 13/01/2023). Selected Physician by categories define in OECD. stats was used to compare with Malaysian Specialists. Refer to website for definition and comparison with other variable used in OECD stats.

ANNEX 2: HRH TRENDS, DISTIRBUTION, AGE, GENDER

HRH TRENDS

Data on the stock of Human Resources for Health (HRH) in both the public and private sectors is available only for health worker categories that are legally required to be registered. Community nurses are employed almost exclusively in the public sector.

Table 29: Number of Doctors, Dental Practitioner, Pharmacists, Nurses and AMO's (per 10,000 Population), 2003–2021

Personnel	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Doctors	8.23	8.21	8.33	9.77	10.58	12.64	13.20	15.79	15.14	14.91	15.82	18.04	18.88	20.74	22.66	23.81
Dental Practitioner	1.10	1.16	1.31	1.26	1.34	1.47	1.55	1.76	1.96	2.05	2.27	2.68	2.99	3.32	3.55	3.85
Pharmacists	1.61	1.68	2.31	2.70	2.74	2.98	3.29	3.39	4.08	3.37	3.32	3.61	4.14	5.81	5.85	5.69
Nurses	12.99	13.30	13.89	14.33	15.33	24.60	27.08	27.98	29.14	30.25	30.24	33.16	32.85	33.07	33.66	35.29
AMO's	2.90	2.93	3.27	3.33	3.65	3.85	4.04	4.21	4.24	4.72	4.93	5.39	5.53	5.90	6.82	7.14

Source: Ministry of Health (2007–2022)

Table 30: Number of Community Nurse, Dental Nurse / Therapist, Optician, Optometrist and Assistant Pharmacist (per 10,000 Population), 2002–2021

Personnel	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Community Nurse	6.04	6.09	6.88	6.59	6.98	7.25	7.89	8.16	8.43	7.99	7.94	7.65	7.25	7.22	6.85	6.37
Dental Nurse	0.80	0.85	0.81	0.86	0.88	0.87	0.91	0.94	0.93	0.90	0.90	0.91	0.88	0.86	0.86	0.87
Optician	-	-	0.91	0.96	1.00	0.87	1.00	1.03	1.04	1.02	1.03	0.78	0.76	0.75	0.77	0.76
Optometrist	-	-	0.25	0.27	0.31	0.31	0.39	0.45	0.47	0.51	0.57	0.45	0.51	0.54	0.66	0.72
Assistant Pharmacist	0.98	0.98	1.00	1.04	1.17	1.22	1.55	1.63	1.67	1.70	1.79	1.87	1.94	1.97	1.98	1.93

Source: Ministry of Health (2007–2022)

Table 31: Number of Allied Health Personnel (per 10,000 Population) from 2015 to 2021

PERSONNEL	2015	2016	2017	2018	2019	2020	2021
Physiotherapist	0.44	0.44	0.43	0.44	0.44	0.44	0.47
Radiographers	0.9	0.91	0.89	0.90	0.90	0.94	0.99
Occupational Therapists	0.33	0.34	0.36	0.36	0.37	0.37	0.40
Dental Nurse / Dental Therapist	0.92	0.92	0.91	0.88	0.86	0.86	0.87
Dental Technologist	0.59	0.61	0.60	0.29*	0.29	0.31	0.31
Dental Surgery Assistant	0.13	0.13	1.33	1.23	1.29	1.34	1.40
Medical Laboratory Technician (MLT)	2	2.1	1.98	1.98	1.98	2.04	2.35
Environmental Health Officer	*nil*	*nil*	*nil*	*nil*	0.07	0.06	0.08
Assistant Environmental Health Officer	1.44	1.48	1.55	1.57	1.54	1.61	1.74

Source: Ministry of Health (2016–2022)

Notes: Data from Non-MOH and private sector is unavailable

DISTRIBUTION BY SECTOR

Table 32: Distribution of Doctors by Sector, 2000–2021

YEAR	Public		Private		TOTAL
	n	%	n	%	
2000	8410	53.8%	7209	46.2%	15619
2001	8615	53.4%	7531	46.6%	16146
2002	9424	54.0%	8018	46.0%	17442
2003	8946	49.2%	9245	50.8%	18191
2004	9410	51.6%	8836	48.4%	18246
2005	10943	54.4%	9612	47.8%	20105
2006	13335	60.8%	8602	39.2%	21937
2007	14298	60.2%	9440	39.8%	23738
2008	15096	60.1%	10006	39.9%	25102
2009	20192	66.1%	10344	33.9%	30536
2010	22429	68.0%	10550	32.0%	32979
2011	25845	70.6%	10762	29.4%	36607
2012	27478	71.0%	11240	29.0%	38718
2013	35129	74.9%	11697	24.9%	46916
2014	33275	73.0%	12290	27.0%	45565
2015	33545	72.2%	12946	27.8%	46491
2016	36403	72.7%	13684	27.3%	50087
2017	43348	75.0%	14483	25.0%	57831
2018	46509	76.0%	14649	24.0%	61158
2019	52,129	77.13%	15457	22.87%	67,586
2020*	54,338	78.38%	14990	21.62%	69,328
2021*	55,918	77.54%	16196	22.46%	72,114

Source: Ministry of Health (2001–2019)

Notes: Non MOH for public sectors data is only available from the year 2017, the previous year's public sector= MOH

Table 33: Distribution of Dental Practitioner s by Sector, 2000–2021

YEAR	Public		Private		TOTAL
	n	%	n	%	
2000	750	35.0%	1394	65.0%	2144
2001	782	35.1%	1443	64.9%	2225
2002	879	38.3%	1418	61.7%	2297
2003	992	41.0%	1426	59.0%	2418
2004	1111	43.6%	1439	56.4%	2550
2005	1263	45.9%	1488	54.1%	2751
2006	1368	46.5%	1572	53.5%	2940
2007	1540	48.7%	1625	51.3%	3165
2008	1922	52.8%	1718	47.2%	3640
2009	1858	52.1%	1709	47.9%	3567
2010	2055	53.9%	1755	46.1%	3810
2011	2452	57.7%	1801	42.3%	4253
2012	2664	58.4%	1894	41.6%	4558
2013	2777	58.4%	1979	41.6%	4756
2014	3763	63.9%	2125	36.1%	5888
2015	4021	63.0%	2363	37.0%	6384
2016	4591	63.9%	2595	36.1%	7186
2017	5736	66.7%	2832	32.9%	8598
2018	6455	66.6%	3244	33.4%	9699
2019	7087	65.61%	3714	34.39%	10801
2020	7443	64.18%	4154	35.82%	11597
2021	7785	61.91%	4789	38.09%	12574

Source: Ministry of Health (2001–2022)

Table 34: Distribution of Pharmacists by Sector, 2000–2021

YEAR	Public		Private		TOTAL
	n	%	n	%	
2000	438	18.8%	1899	81.4%	2333
2001	460	17.9%	2107	82.1%	2567
2002	517	18.3%	2311	81.7%	2828
2003	798	25.7%	2306	74.3%	3104
2004	804	22.9%	2702	77.1%	3506
2005	955	23.8%	3057	76.2%	4012
2006	889	20.8%	3403	79.5%	4282
2007	1250	27.3%	3321	72.7%	4571
2008	3070	48.0%	3327	52.0%	6397
2009	3877	57.1%	2907	42.9%	6784
2010	4610	59.4%	3149	40.6%	7759
2011	5288	54.9%	3344	34.7%	9632
2012	5908	61.2%	3744	38.8%	9652
2013	6501	66.2%	3325	33.8%	9826
2014	7117	57.9%	5177	42.1%	12294
2015	6608	62.9%	3903	37.1%	10511
2016	6499	61.8%	4009	38.2%	10508
2017	6599	57.1%	4960	42.9%	11559
2018	8246	61.4%	5174	38.6%	13420
2019*	9273	64.58%	5,086	35.42%	14,359
2020*	10641	66.13%	5,450	33.87%	16,091
2021*	11452	65.50%	6032	34.50%	17,484

Source: Ministry of Health (2001–2022)

*Note**

Total number of pharmacists from 2019 to 2021 does not include provisional and full registration due to unavailability of sector classification. In 2019 and 2020, there were 4,579 and 3,021, provisional and fully registered pharmacists respectively. In 2021, there were 1091 fully registered pharmacists reported.

Table 35: Distribution of Nurses by Sector, 2000–2021

YEAR	Public		Private		TOTAL
	n	%	n	%	
2000	23255	74.7%	7874	25.3%	31129
2001	24543	73.7%	8752	26.3%	33295
2002	26029	73.8%	9251	26.2%	35280
2003	27089	73.6%	9695	26.4%	36784
2004	30002	74.6%	10218	25.4%	40220
2005	32580	73.8%	11540	26.2%	44120
2006	34598	72.6%	13044	27.4%	47642
2007	36150	73.9%	12766	26.1%	48916
2008	38757	71.5%	15633	28.8%	54208
2009	45060	75.9%	14315	24.1%	59375
2010	47992	69.4%	21228	30.7%	69110
2011	50063	66.9%	24725	33.1%	74778
2012	56089	66.0%	28879	34.0%	84968
2013	56503	67.9%	26653	32.1%	83156
2014	64348	69.4%	28333	30.6%	92681
2015	69590	69.6%	30335	30.4%	99925
2016	72025	70.2%	30539	29.8%	102564
2017	71480	67.3%	34809	32.7%	106289
2018	71499	67.2%	34874	32.8%	106373
2019	71778	66.62%	35,970	33.38%	107,748
2020	72826	66.25%	37,095	33.75%	109,921
2021	78426	68.06%	36,804	31.94%	115,230

Source: Ministry of Health (2001–2022)

Table 36: Distribution of Assistant Medical Officer's by Sector, 2000–2021

YEAR	Public		Private		TOTAL
	n	%	n	%	
2002	5341	90.8%	538	9.2%	5879
2003	5504	90.8%	556	9.2%	6060
2004	5510	91.0%	547	9.0%	6057
2005	6113	91.1%	596	8.9%	6709
2006	7150	92.6%	570	7.4%	7720
2007	7411	93.2%	537	6.8%	7948
2008	8310	91.5%	768	8.5%	9078
2009	8648	91.9%	766	8.1%	9414
2010	9556	92.3%	794	7.7%	10350
2011	10289	92.2%	873	7.8%	11162
2012	10902	92.0%	944	8.0%	11846
2013	11089	88.6%	1428	11.4%	12517
2014	11775	92.2%	998	7.8%	12773
2015	13094	88.9%	1630	11.1%	14724
2016	13708	87.9%	1894	12.1%	15602
2017	14427	81.4%	2847	16.1%	17724
2018	14876	83.1%	3019	16.9%	17895
2019	15686	81.66%	3,522	18.34%	19,208
2020	18473	83.00%	3,784	17.00%	22,257
2021	19142	82.05%	4,187	17.95%	23,329

Source: Ministry of Health (2001–2022)

Table 37: Distribution of Specialists by Sector, 2021

YEAR	Public		Private		Total
	n	%	n	%	
Medical Group of Specialist	3282	67.0	1647	33.0	4929
Surgical Group of Specialist	2767	59.0	1887	41.0	4654
Obstetrics & Gynaecology (O&G)	524	44.0	654	56.0	1178
Psychiatry	365	77.0	110	23.0	475
Paediatric	778	58.0	568	42.0	1346
Family Medicine	560	77.0	169	23.0	729
Public Health Medicine	742	94.0	47	6.0	789
Other Specialist not elsewhere classified	143	92.0	13	8.0	156
Total Specialist	**9161**	**64.0**	**5095**	**36.0**	**14256**

Source: National Specialist Register, 2022

Note: Data is a representation of an accumulation of the number of specialists registered over the years. Specialist registration is a one-time registration

Table 38: Distribution of Dental Nurses / Dental Therapist by Sector, 2000–2021

YEAR	NUMBER		
	PUBLIC SECTOR	PRIVATE SECTOR	TOTAL
2002	1805	NA	1805
2003	1888	NA	1888
2004	1993	NA	1993
2005	2071	NA	2071
2006	2129	NA	2129
2007	2319	NA	2319
2008	2254	33	2287
2009	2447	NA	2447
2010	2486	NA	2486
2011	2528	NA	2528
2012	2600	84	2684
2013	2706	87	2793
2014	2720	72	2792
2015	2821	NA	2812
2016	2845	NA	2845
2017	2915	NA	2915
2018*	2863	NA	2863
2019	2812	NA	2812
2020	2805	NA	2805
2021	2849	NA	2849

Source: Ministry of Health (2001–2022)

** Notes: Dental nurses is known as dental therapists from the year 2016*

Table 39: Distribution of Dental Technologists by Sector, 2000–2021

YEAR	NUMBER (%)		
	PUBLIC SECTOR	PRIVATE SECTOR	TOTAL
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%)	1559
2012	963 (56.3%)	749 (43.8%)	1712
2013	1000 (56.7%)	765 (43.3%)	1765
2014	1053 (57.8%)	770 (42.2%)	1823
2015	1071 (56.9%)	811(43.1%)	1882
2016	1042 (56.2%)	813 (43.8%)	1855
2017	1060 (55.3%)	857 (44.7%)	1917
2018	924	NA	924
2019	960	NA	960
2020	1,002	NA	1,002
2021	1024	NA	1024

Source: Ministry of Health (2001–2022)

Table 40: Distribution of Dental Surgery Assistant by sector, 2002–2021

YEAR	Public	Private	Total
	n	n	n
2002	1738	NA	1738
2003	1891	NA	1891
2004	2111	NA	2111
2005	2355	NA	2355
2006	2471	NA	2471
2007	2632	NA	2632
2008	3278	NA	3278
2009	2820	NA	2820
2010	2950	NA	2950
2011	3334	NA	3334
2012	4212	44	4256
2013	4262	39	4301
2014	4331	30	4361
2015	4171	41	4212
2016	4124	53	4177
2017	4197	74	4271
2018	3987	0	3987
2019	4202	0	4202
2020	4384	0	4384
2021	4556	0	4556

Source: Ministry of Health (2003–2022)

Table 41: Distribution of Assistant Pharmacist by Sector, 2007–2021

YEAR	Public		Private		TOTAL
	n	%	n	%	
2007	2652	100.0%	-	-	2652
2008	2778	100.0%	-	-	2778
2009	2949	100.0%	-	-	2949
2010	3318	100.0%	-	-	3318
2011	3534	100.0%	-	-	3534
2012	4068	89.4%	482	10.6%	4550
2013	4294	88.6%	552	11.4%	4846
2014	4350	86.3%	688	13.7%	5038
2015	4372	82.4%	936	17.6%	5308
2016	4446	78.4%	1229	21.7%	5672
2017	4523	75.3%	1484	24.7%	6007
2018	4624	73.7%	1652	26.3%	6276
2019	4696	73.26%	1714	26.74%	6410
2020	4675	72.19%	1801	27.81%	6476
2021	4706	74.66%	1597	25.34%	6303

Source: Ministry of Health (2001–2022)

Table 42: Distribution of Midwives and Community Nurses by Sector, 2002–2021

YEAR	Public		Private		TOTAL
	n	%	n	%	
2002	9043	98.2%	167	1.8%	9210
2003	11293	97.3%	317	2.7%	11610
2004	13128	98.8%	164	1.2%	13292
2005	15408	98.7%	210	1.3%	15618
2006	16090	96.5%	577	3.5%	16667
2007	16550	98.0%	333	2.0%	16883
2008	18143	97.3%	500	2.7%	18643
2009	18851	93.5%	1312	6.5%	20163
2010	21282	99.2%	167	0.8%	21449
2011	21928	98.5%	338	1.5%	22266
2012	22917	98.7%	301	1.3%	23218
2013	24152	98.9%	267	1.1%	24419
2014	25179	99.1%	241	0.9%	25420
2015	24980	99.2%	195	0.8%	25175
2016	24724	98.3%	416	1.7%	25140
2017	23771	97.0%	742	3.0%	24513
2018	23136	98.5%	279	1.2%	23490
2019	23183	98.61%	327	1.39%	23510
2020	22032	98.52%	330	1.48%	22362
2021	20505	98.51%	311	1.49%	20816

Source: Ministry of Health (2001–2022)

Table 43: Traditional and Complementary Medicine (T&CM) Practitioners by Field of Practice, 2021

FIELD OF PRACTICE	TOTAL
Traditional Malay Medicine	174
Traditional Chinese Medicine	1412
Traditional Indian Medicine	25
Homeopathy	81
Chiropractic	97
Osteopathy	3
Islamic Medical Practice	459
TOTAL	**2251**

Source: Traditional and Complementary Medicine Division (2023)

Table 44: Traditional and Complementary Medicine (T&CM) Practitioners by State, 2021

STATE	NUMBER OF REGISTERED PRACTITIONER
Perlis	21
Kedah	97
Pulau Pinang	156
Perak	279
Selangor	881
W.P. Kuala Lumpur	514
W.P. Putrajaya	13
W.P. Labuan	0
Negeri Sembilan	140
Melaka	31
Johor	108
Pahang	5
Terengganu	2
Kelantan	0
Sabah	3
Sarawak	1
TOTAL	**2251**

Source: Traditional and Complementary Medicine Division (2022)

Table 45: Distribution of Traditional and Complementary Practitioner (T&CM) Practitioners by Age Group, 2021

Age Group in Years	% Male	% Female	Male	Female	Total
T&CM Practitioner age <25	37.7	63.3	11	19	30
T&CM Practitioner age 25-34	44.5	55.5	261	326	587
T&CM Practitioner age 35-44	67.2	32.8	277	135	412
T&CM Practitioner age 45-54	62.2	37.8	345	210	555
T&CM Practitioner age 55-64	60.7	39.3	247	160	407
T&CM Practitioner age 65+	73.5	26.5	191	69	260

Source: Traditional and Complementary Medicine Division (2022)

AGE AND GENDER PROFILE

Table 46: Percentage of Healthcare Worker by Gender, 2021

Profession	Male (%)	Female (%)
Specialist	43.9%	56.1%
Family Medicine	10.9%	89.1%
Public Health Medicine	40.6%	59.4%
Doctor [a]	56.0%	44.0%
Dental Practitioner [b]	29.9%	70.1%
Pharmacist [c]	25.9%	74.1%
Nurse [d]	5.4%	94.6%
AMO [e]	89.81%	10.19%

Sources:

a: Malaysian Medical Council, 2022

b: Malaysian Dental Council, 2022

c. Pharmacy Board Malaysia, 2022

d. Malaysia Nursing Board, 2022

e. Medical Assistants (Registration) Board, 2022

Table 47: Distribution of Dental Practitioner by Age Group, 2021

Age group in years	% Male	% Female	Male	Female	Total
Dentists aged <30	27.0%	73.0%	1356	3674	5030
Dentists aged 31-40	27.0%	73.0%	1353	3663	5016
Dentists aged 41-50	27.9%	72.1%	321	828	1149
Dentists aged 51-59	42.8%	57.2%	295	395	690
Dentists aged > 60	62.9%	37.1%	438	258	696
Dentists aged 65+	0%	0%	0	0	0
Total			**3763**	**8818**	**12581**

Source: Malaysian Dental Council (2022)

Doctors

Data on the age group for all Doctors including those in the public and private sector is unavailable. However, the data for Doctors in MOH have been generated using HRMIS data as shown before.

Table 48: Percentage of MOH employed healthcare personnel by gender, 2021

Healthcare Personnel in MOH	Male		Female		Total
	n	%	n	%	
Doctors*	18042	35.6%	32582	64.4%	50624
Dental practitioner*	1474	21.3%	5446	78.7%	6920
Pharmacist*	2405	20.3%	9432	79.7%	11837
Nurses	2887	4.1%	67910	95.9%	70797
AMO	15396	83.5%	3042	16.5%	18438

Source: Human Resource Division (2022)

** Note: The total number is not the same as published data as there is an error in the mechanism to capture gender data in HRMIS.*

Pharmacists, Nurses and Allied Health Professionals

Data on the age profile is not available sector-wide, however data for staff employed by the MOH is made available in Table 55 to Table 58.

Table 49: Number of MOH employed Doctors, Dental Practitioner, Pharmacists, Nurses and AMO's by Age Group, 2015–2021

Profession	Age group	2015	2016	2017	2018	2019	2020	2021	Summary for 2021 age group
Doctors	< 30	18230	17985	13658	12674	20446	22312	22074	Below age 39: 89.7%
	30-39	9476	11187	12542	14972	18238	20657	23342	
	40-49	2042	2327	2915	3144	3389	3673	4005	
	> 50	411	387	956	994	1084	1093	1203	
	Total	**30159**	**31886**	**30071**	**31784**	**43157**	**47735**	**50624**	
Dental Practitioner	< 30	2422	2706	2382	1975	3931	4067	4011	Below age 39: 93.8%
	30-39	677	821	1002	1254	1733	2081	2477	
	40-49	193	187	197	225	230	271	306	
	> 50	109	104	152	137	133	122	126	
	Total	**3401**	**3818**	**3733**	**3591**	**6027**	**6541**	**6920**	
Pharmacists	< 30	5556	5268	4469	4045	6077	5908	5427	Below age 39: 95.0%
	30-39	1766	2230	2861	3507	4346	5022	5818	
	40-49	138	171	211	263	344	411	513	
	> 50	94	88	98	93	91	78	79	
	Total	**7554**	**7757**	**7639**	**7908**	**10858**	**11419**	**11837**	
Nurses	< 30	28236	27781	25561	23335	20692	20948	18803	Below age 39: 71.8%
	30-39	20149	21526	23559	25192	26889	28708	32062	
	40-49	9309	10195	11479	12307	13054	14126	15682	
	> 50	4279	3963	3815	3583	3886	3904	4249	
	Total	**61973**	**63465**	**64414**	**64417**	**64521**	**67686**	**70796**	
AMOs	< 30	5104	5662	5664	6204	5358	8238	8981	Below age 39: 79.4%
	30-39	4215	4382	4680	4795	3756	5224	5665	
	40-49	1535	1717	1963	2169	1858	2688	3011	
	> 50	802	775	720	690	573	728	781	
	Total	**11656**	**12536**	**13027**	**13858**	**11545**	**16878**	**18438**	

Source: Human Resource Division (2022)

Note: The total number is not the same as published data as there is an error in the mechanism to capture gender data in HRMIS.

Table 50: Number of MOH employed Allied Health Personnel by Gender, 2015–2021

Profession	Gender	2015	2016	2017	2018	2019	2020	2021	2021 Gender Profile	
									Female	Male
Audiologist	Male	20	19	17	29	29	27	27	86%	14%
	Female	149	151	153	166	161	162	171		
	Total	**169**	**170**	**170**	**195**	**190**	**189**	**198**		
Clinical Scientist (Biochemist)	Male	88	89	87	86	81	84	88	82%	18%
	Female	356	366	367	318	310	390	403		
	Total	**444**	**455**	**454**	**448**	**391**	**474**	**491**		
Clinical Scientist (Biomedical)	Male	12	12	12	12	13	13	13	84%	16%
	Female	70	70	70	70	70	70	70		
	Total	**82**	**82**	**82**	**82**	**83**	**83**	**83**		
Clinical Scientist (Embriologist)	Male	3	4	4	4	5	5	5	64%	36%
	Female	6	6	6	6	6	6	9		
	Total	**9**	**10**	**10**	**10**	11	**11**	**14**		
Clinical Scientist (Entomologist)	Male	37	36	36	36	37	40	39	72%	28%
	Female	90	90	90	90	88	94	98		
	Total	**127**	**126**	**126**	**126**	**125**	**134**	**137**		
Clinical Scientist (Geneticist)	Male	2	2	2	2	2	3	3	87%	13%
	Female	17	17	17	17	19	20	20		
	Total	**19**	**19**	**19**	**19**	**21**	**23**	**23**		
Clinical Scientist (Microbiologist)	Male	102	107	106	104	121	117	106	74%	26%
	Female	278	284	284	280	269	289	299		
	Total	**380**	**391**	**390**	**384**	**390**	**406**	**405**		
Nutritionist	Male	67	67	67	67	66	70	69	85%	15%
	Female	355	360	356	355	373	377	378		
	Total	**422**	**427**	**423**	**422**	**439**	**447**	**447**		
Dietitian	Male	52	58	57	57	52	52	52	88%	12%
	Female	373	393	392	389	378	383	392		
	Total	**425**	**451**	**449**	**446**	**430**	**435**	**444**		
Clinical Psychologist	Male	1	1	1	2	2	7	5	88%	12%
	Female	16	16	22	27	28	24	37		
	Total	**17**	**17**	**23**	**29**	**30**	**31**	**42**		
Counsellor	Male	43	41	40	40	36	36	36	75%	25%
	Female	116	115	115	112	110	110	110		
	Total	**159**	**156**	**155**	**152**	**146**	**146**	**146**		
Medical Physicist	Male	76	75	73	74	70	79	79	68%	32%
	Female	137	142	142	140	150	164	165		
	Total	**213**	**217**	**215**	**214**	**220**	**243**	**244**		

Profession	Gender	2015	2016	2017	2018	2019	2020	2021	2021 Gender Profile	
									Female	Male
Forensic Science Officer	Male	17	17	17	17	19	20	20	55%	45%
	Female	22	22	22	24	23	24	24		
	Total	**39**	**39**	**39**	**41**	**42**	**44**	**44**		
Diagnostic Radiographer	Male	1132	1137	1137	1136	1041	1045	1060	56%	44%
	Female	1388	1397	1417	1433	1297	1321	1354		
	Total	**2520**	**2534**	**2554**	**2569**	**2338**	**2366**	**2414**		
Food Service Officer	Male	81	82	103	104	99	102	113	68%	32%
	Female	238	241	248	248	216	240	240		
	Total	**319**	**323**	**351**	**352**	**315**	**342**	**353**		
Health Education Officer	Male	108	108	102	106	106	106	106	57%	43%
	Female	138	138	137	139	138	138	138		
	Total	**246**	**246**	**239**	**245**	**244**	**244**	**244**		
Medical Record Officer	Male	106	104	99	106	113	126	128	73%	27%
	Female	302	296	286	299	325	352	353		
	Total	**408**	**400**	**385**	**405**	**438**	**478**	**481**		
Medical Social Officer	Male	76	74	73	114	77	79	80	71%	29%
	Female	186	182	181	144	184	188	195		
	Total	**262**	**256**	**254**	**258**	**261**	**267**	**275**		
Occupational Therapist	Male	315	327	342	344	317	345	351	75%	25%
	Female	877	890	958	996	952	1011	1028		
	Total	**1192**	**1217**	**1300**	**1340**	**1269**	**1356**	**1379**		
Physiotherapist	Male	448	459	469	461	462	462	462	70%	30%
	Female	1043	1051	1093	1097	1082	1082	1082		
	Total	**1491**	**1510**	**1562**	**1558**	**1544**	**1544**	**1544**		
Speech-Language Therapist	Male	10	10	10	9	7	7	8	95%	5%
	Female	94	92	105	119	130	133	142		
	Total	**104**	**102**	**115**	**128**	**137**	**140**	**150**		
Radiation Therapist	Male	78	89	92	102	102	177	102	66%	34%
	Female	106	133	148	183	197	196	197		
	Total	**184**	**222**	**240**	**285**	**299**	**373**	**299**		
Environmental Health Officer	Male	3664	3738	4013	4102	3635	3676	3788	26%	74%
	Female	853	878	945	996	1274	1268	1299		
	Total	**4517**	**4616**	**4958**	**5098**	**4909**	**4944**	**5087**		
Medical Laboratory Technologist	Male	*na*	*na*	*na*	*na*	1610	1623	1645	73%	27%
	Female	*na*	*na*	*na*	*na*	4200	4280	4442		
	Total	*na*	*na*	*na*	*na*	**5810**	**5903**	**6087**		
Optometrist	Male	*na*	*na*	*na*	*na*	41	43	42	86%	14%
	Female	*na*	*na*	*na*	*na*	252	255	258		
	Total	*na*	*na*	*na*	*na*	**293**	**298**	**300**		

Source: Allied Health Division (2022)

Table 51: Number of MOH-employed Allied Health personnel by age group and gender, 2021

Profession	Age	Gender	Total	Summary 2021 profile by age and gender
Audiologist	<30	Male	8	Female: 86% Below age 40: 88%
		Female	29	
	31-40	Male	15	
		Female	123	
	41-50	Male	4	
		Female	19	
	51-60	Male	0	
		Female	0	
	Total		**198**	
Clinical Scientist (Biochemist)	<30	Male	8	Female: 82% Below age 40: 68%
		Female	29	
	31-40	Male	43	
		Female	256	
	41-50	Male	23	
		Female	101	
	51-60	Male	14	
		Female	17	
	Total		**491**	
Clinical Scientist (Biomedical)	<30	Male	0	Female: 84% Below age 40: 92%
		Female	0	
	31-40	Male	11	
		Female	65	
	41-50	Male	1	
		Female	4	
	51-60	Male	1	
		Female	1	
	Total		**83**	
Clinical Scientist (Embriologist)	<30	Male	0	Female: 64% Below age 40: 93%
		Female	2	
	31-40	Male	4	
		Female	7	
	41-50	Male	0	
		Female	0	
	51-60	Male	1	
		Female	0	
	Total		**14**	
Clinical Scientist (Entomologist)	<30	Male	4	Female: 72% Below age 40: 66%
		Female	24	
	31-40	Male	18	
		Female	45	
	41-50	Male	10	
		Female	27	
	51-60	Male	7	
		Female	2	
	Total		**137**	

Profession	Age	Gender	Total	Summary 2021 profile by age and gender
Clinical Scientist (Geneticist)	<30	Male	1	Female: 87% Below age 40: 91%
		Female	6	
	31-40	Male	2	
		Female	12	
	41-50	Male	0	
		Female	2	
	51-60	Male	0	
		Female	0	
	Total		**23**	
Clinical Scientist (Microbiologist)	<30	Male	9	Female: 74 % Below age 40: 67%
		Female	15	
	31-40	Male	58	
		Female	191	
	41-50	Male	26	
		Female	78	
	51-60	Male	13	
		Female	15	
	Total		**405**	
Nutritionist	<30	Male	1	Female: 85% Below age 40: 80%
		Female	22	
	31-40	Male	47	
		Female	288	
	41-50	Male	15	
		Female	62	
	51-60	Male	6	
		Female	6	
	Total		**447**	
Dietitian	<30	Male	15	Female: 88% Below age 40: 91%
		Female	88	
	31-40	Male	28	
		Female	274	
	41-50	Male	8	
		Female	21	
	51-60	Male	1	
		Female	9	
	Total		**444**	
Clinical Psychologist	<30	Male	2	Female: 88% Below age 40: 93 %
		Female	13	
	31-40	Male	3	
		Female	21	
	41-50	Male	0	
		Female	3	
	51-60	Male	0	
		Female	0	
	Total		**42**	

Profession	Age	Gender	Total	Summary 2021 profile by age and gender
Counsellor	<30	Male	0	Female: 75% Below age 40: 71%
		Female	3	
	31-40	Male	19	
		Female	81	
	41-50	Male	15	
		Female	24	
	51-60	Male	2	
		Female	2	
	Total		**146**	
Medical Physicist	<30	Male	7	Female: 68% Below age 40: 83%
		Female	17	
	31-40	Male	43	
		Female	136	
	41-50	Male	25	
		Female	11	
	51-60	Male	4	
		Female	1	
	Total		**244**	
Forensic Science Officer	<30	Male	3	Female: 55% Below age 40: 84%
		Female	2	
	31-40	Male	13	
		Female	19	
	41-50	Male	4	
		Female	3	
	51-60	Male	0	
		Female	0	
	Total		**44**	
Diagnostic Radiographer	<30	Male	142	Female: 56% Below age 40: 77%
		Female	274	
	31-40	Male	676	
		Female	758	
	41-50	Male	190	
		Female	280	
	51-60	Male	52	
		Female	42	
	Total		**2414**	
Food Service Officer	<30	Male	5	Female: 68% Below age 40: 77%
		Female	1	
	31-40	Male	78	
		Female	188	
	41-50	Male	22	
		Female	41	
	51-60	Male	8	
		Female	10	
	Total		**353**	

Profession	Age	Gender	Total	Summary 2021 profile by age and gender
Health Education Officer	<30	Male	12	Female: 57% Below age 40: 52%
		Female	6	
	31-40	Male	39	
		Female	70	
	41-50	Male	36	
		Female	53	
	51-60	Male	19	
		Female	9	
	Total		**244**	
Medical Record Officer	<30	Male	18	Female: 73% Below age 40: 64%
		Female	28	
	31-40	Male	49	
		Female	212	
	41-50	Male	38	
		Female	74	
	51-60	Male	23	
		Female	39	
	Total		**481**	
Medical Social Officer	<30	Male	5	Female: 71% Below age 40: 60%
		Female	14	
	31-40	Male	36	
		Female	110	
	41-50	Male	22	
		Female	58	
	51-60	Male	17	
		Female	13	
	Total		**275**	
Occupational Therapist	<30	Male	119	Female: 75% Below age 40: 86%
		Female	358	
	31-40	Male	182	
		Female	522	
	41-50	Male	32	
		Female	115	
	51-60	Male	18	
		Female	33	
	Total		**1,379**	
Physiotherapist	<30	Male	205	Female: 70% Below age 40: 87%
		Female	464	
	31-40	Male	201	
		Female	477	
	41-50	Male	41	
		Female	122	
	51-60	Male	15	
		Female	19	
	Total		**1,544**	

Profession	Age	Gender	Total	Summary 2021 profile by age and gender
Speech-Language Therapist	<30	Male	2	Female: 95% Below age 40: 90%
		Female	71	
	31-40	Male	4	
		Female	58	
	41-50	Male	2	
		Female	13	
	51-60	Male	0	
		Female	0	
	Total		**150**	
Radiation Therapist	<30	Male	28	Female: 66% Below age 40: 80%
		Female	94	
	31-40	Male	49	
		Female	68	
	41-50	Male	25	
		Female	34	
	51-60	Male	0	
		Female	1	
	Total		**299**	
Environmental Health Officer	<30	Male	913	Female: 26% Below age 40: 75%
		Female	369	
	31-40	Male	1739	
		Female	811	
	41-50	Male	803	
		Female	119	
	51-60	Male	333	
		Female	0	
	Total		**5087**	
Medical Laboratory Technologist	<30	Male	286	Female: 73% Below age 40: 74%
		Female	1081	
	31-40	Male	880	
		Female	2252	
	41-50	Male	309	
		Female	942	
	51 - 60	Male	170	
		Female	167	
	Total		**6087**	
Optometrist	<30	Male	7	Female: 86% Below age 40: 77%
		Female	16	
	31-40	Male	30	
		Female	178	
	41-50	Male	4	
		Female	58	
	51-60	Male	1	
		Female	6	
	Total		**300**	

Source: Allied Health Division (2022)

Table 52: Number of MOH-employed Allied Health personnel according to placement setting by age group and gender, 2021

Profession	Age	Gender	Ministry	State/ District	Institution	Hospitals	Clinic	Others	Total
Audiologist	<30	Male	0	0	0	8	0	0	**8**
		Female	0	0	0	29	0	0	**29**
	31-40	Male	0	0	0	15	0	0	**15**
		Female	0	0	0	123	0	0	**123**
	41-50	Male	0	0	0	4	0	0	**4**
		Female	0	0	0	19	0	0	**19**
	51-60	Male	0	0	0	0	0	0	**0**
		Female	0	0	0	0	0	0	**0**
	Total		**0**	**0**	**0**	**198**	**0**	**0**	**198**
Clinical Scientist (Biochemist)	<30	Male	0	0	1	6	0	0	**8**
		Female	1	1	2	24	0	1	**29**
	31-40	Male	1	3	6	33	0	0	**43**
		Female	12	5	37	202	0	0	**256**
	41-50	Male	2	0	3	18	0	0	**23**
		Female	1	0	16	84	0	0	**101**
	51-60	Male	1	0	1	12	0	0	**14**
		Female	1	0	2	14	0	0	**17**
	Total		**19**	**9**	**68**	**393**	**0**	**1**	**491**
Clinical Scientist (Biomedical)	<30	Male	0	0	0	0	0	0	**0**
		Female	0	0	0	0	0	0	**0**
	31-40	Male	0	0	2	8	0	1	**11**
		Female	0	0	4	61	0	0	**65**
	41-50	Male	0	0	0	1	0	0	**1**
		Female	0	0	0	4	0	0	**4**
	51-60	Male	0	0	0	1	0	0	**1**
		Female	0	0	0	1	0	0	**1**
	Total		**0**	**0**	**6**	**76**	**0**	**1**	**83**
Clinical Scientist (Embryologist)	<30	Male	0	0	0	0	0	0	**0**
		Female	0	0	0	2	0	0	**2**
	31-40	Male	0	0	0	4	0	0	**4**
		Female	0	0	0	7	0	0	**7**
	41-50	Male	0	0	0	0	0	0	**0**
		Female	0	0	0	0	0	0	**0**
	51-60	Male	0	0	0	1	0	0	**1**
		Female	0	0	0	0	0	0	**0**
	Total		**0**	**0**	**0**	**14**	**0**	**0**	**14**
Clinical Scientist (Entomologist)	<30	Male	0	4	0	0	0	0	**4**
		Female	1	23	0	0	0	0	**24**
	31-40	Male	0	14	3	0	0	1	**18**
		Female	0	43	1	0	0	1	**45**
	41-50	Male	0	10	0	0	0	0	**10**
		Female	4	20	2	0	0	1	**27**
	51-60	Male	1	6	0	0	0	0	**7**
		Female	1	1	0	0	0	0	**2**
	Total		**7**	**121**	**6**	**0**	**0**	**3**	**137**

Profession	Age	Gender	Ministry	State/ District	Institution	Hospitals	Clinic	Others	Total
Clinical Scientist (Geneticist)	<30	Male	0	0	0	1	0	0	**1**
		Female	0	0	1	5	0	0	**6**
	31-40	Male	0	0	0	2	0	0	**2**
		Female	0	0	1	11	0	0	**12**
	41-50	Male	0	0	0	0	0	0	**0**
		Female	0	0	0	2	0	0	**2**
	51-60	Male	0	0	0	0	0	0	**0**
		Female	0	0	0	0	0	0	**0**
	Total		**0**	**0**	**2**	**21**	**0**	**0**	**23**
Clinical Scientist (Microbiologist)	<30	Male	0	0	2	7	0	0	**9**
		Female	0	0	5	10	0	0	**15**
	31-40	Male	2	0	12	42	0	1	**57**
		Female	4	0	54	134	0	1	**193**
	41-50	Male	0	0	4	22	0	0	**26**
		Female	1	0	17	60	0	0	**78**
	51-60	Male	2	0	2	8	0	0	**12**
		Female	0	0	6	9	0	0	**15**
	Total		**9**	**0**	**102**	**292**	**0**	**2**	**405**
Nutritionist	<30	Male	0	0	0	0	1	0	**1**
		Female	0	4	0	0	18	0	**22**
	31-40	Male	3	10	2	0	32	0	**47**
		Female	39	32	3	3	211	0	**288**
	41-50	Male	1	8	2	1	3	0	**15**
		Female	15	29	4	0	14	0	**62**
	51-60	Male	0	5	0	0	1	0	**6**
		Female	4	2	0	0	0	0	**6**
	Total		**62**	**90**	**11**	**4**	**280**	**0**	**447**
Dietitian	<30	Male	0	0	0	9	6	0	**15**
		Female	0	0	1	70	17	0	**88**
	31-40	Male	1	0	2	15	10	0	**28**
		Female	7	0	13	212	42	0	**274**
	41-50	Male	1	0	1	5	1	0	**8**
		Female	1	0	1	18	1	0	**21**
	51-60	Male	0	0	0	1	0	0	**1**
		Female	2	0	0	7	0	0	**9**
	Total		**12**	**0**	**18**	**337**	**77**	**0**	**444**
Clinical Psychologist	<30	Male	0	0	0	2	0	0	**2**
		Female	0	0	2	11	0	0	**13**
	31-40	Male	0	0	0	3	0	0	**3**
		Female	1	0	9	11	0	0	**21**
	41-50	Male	0	0	0	0	0	0	**0**
		Female	0	0	1	2	0	0	**3**
	51-60	Male	0	0	0	0	0	0	**0**
		Female	0	0	0	0	0	0	**0**
	Total		**1**	**0**	**12**	**29**	**0**	**0**	**42**

Profession	Age	Gender	Ministry	State/ District	Institution	Hospitals	Clinic	Others	Total
Counsellor	<30	Male	0	0	0	0	0	0	**0**
		Female	0	0	1	2	0	0	**3**
	31-40	Male	1	6	0	12	0	0	**19**
		Female	3	21	6	50	1	0	**81**
	41-50	Male	2	10	0	2	1	0	**15**
		Female	5	8	1	10	0	0	**24**
	51-60	Male	0	0	1	1	0	0	**2**
		Female	0	0	0	2	0	0	**2**
	Total		**11**	**45**	**9**	**79**	**2**	**0**	**146**
Medical Physicist	<30	Male	0	3	2	1	0	0	**6**
		Female	2	2	3	10	0	0	**17**
	31-40	Male	9	8	10	16	0	0	**43**
		Female	29	23	19	65	0	0	**136**
	41-50	Male	5	11	5	4	0	0	**25**
		Female	4	2	2	3	0	0	**11**
	51-60	Male	3	0	0	1	0	0	**4**
		Female	0	0	0	1	0	0	**1**
	Total		**52**	**49**	**41**	**101**	**0**	**0**	**243**
Clinical Scientist (Forensic)	<30	Male	0	0	0	3	0	0	**3**
		Female	0	0	0	2	0	0	**2**
	31-40	Male	0	0	0	13	0	0	**13**
		Female	1	0	0	18	0	0	**19**
	41-50	Male	1	0	0	3	0	0	**4**
		Female	0	0	0	3	0	0	**3**
	51-60	Male	0	0	0	0	0	0	**0**
		Female	0	0	0	0	0	0	**0**
	Total		**2**	**0**	**0**	**42**	**0**	**0**	**44**
Diagnostic Radiographer	<30	Male	0	0	3	134	5	0	**142**
		Female	0	0	4	254	16	0	**274**
	31-40	Male	1	0	8	596	71	0	**676**
		Female	1	0	16	584	158	0	**759**
	41-50	Male	2	0	2	159	27	0	**190**
		Female	3	0	5	211	61	0	**280**
	51-60	Male	1	0	0	47	4	0	**52**
		Female	1	0	0	37	4	0	**42**
	Total		**9**	**0**	**38**	**2022**	**346**	**0**	**2415**
Food Service Officer (Healthcare)	<30	Male	0	0	0	5	0	0	**5**
		Female	0	0	1	0	0	0	**1**
	31-40	Male	0	0	4	74	0	0	**78**
		Female	0	0	12	176	0	0	**188**
	41-50	Male	0	0	3	19	0	0	**22**
		Female	0	0	5	36	0	0	**41**
	51-60	Male	0	0	2	6	0	0	**8**
		Female	0	0	1	9	0	0	**10**
	Total		**0**	**0**	**28**	**325**	**0**	**0**	**353**

Profession	Age	Gender	Ministry	State/ District	Institution	Hospitals	Clinic	Others	Total
Health Education Officer	<30	Male	3	4	3	2	0	0	**12**
		Female	1	2	2	1	0	0	**6**
	31-40	Male	7	20	3	9	0	0	**39**
		Female	14	26	7	23	0	0	**70**
	41-50	Male	5	16	6	9	0	0	**36**
		Female	11	20	11	11	0	0	**53**
	51-60	Male	2	9	3	5	0	0	**19**
		Female	1	5	1	2	0	0	**9**
	Total		**44**	**102**	**36**	**62**	**0**	**0**	**244**
Medical Record Officer	<30	Male	0	2	1	15	0	0	**18**
		Female	1	1	2	24	0	0	**28**
	31-40	Male	2	5	0	42	0	0	**49**
		Female	9	11	1	191	0	0	**212**
	41-50	Male	2	4	0	32	0	0	**38**
		Female	6	7	0	61	0	0	**74**
	51-60	Male	1	4	0	18	0	0	**23**
		Female	5	1	0	33	0	0	**39**
	Total		**26**	**35**	**4**	**416**	**0**	**0**	**481**
Medical Social Officer	<30	Male	5	0	0	0	0	0	**5**
		Female	12	0	2	0	0	0	**14**
	31-40	Male	2	0	4	27	3	0	**36**
		Female	3	1	11	86	9	0	**110**
	41-50	Male	1	1	1	16	3	0	**22**
		Female	2	0	4	50	2	0	**58**
	51-60	Male	1	2	0	12	2	0	**17**
		Female	2	0	0	11	0	0	**13**
	Total		**28**	**4**	**22**	**202**	**19**	**0**	**275**
Occupational Therapist	<30	Male	0	0	7	81	28	3	**119**
		Female	0	0	27	217	98	16	**358**
	31-40	Male	0	0	17	127	33	5	**182**
		Female	2	2	48	361	96	13	**522**
	41-50	Male	0	0	7	23	0	2	**32**
		Female	1	1	15	91	7	0	**115**
	51-60	Male	2	0	2	14	0	0	**18**
		Female	0	0	5	28	0	0	**33**
	Total		**5**	**3**	**128**	**942**	**262**	**39**	**1379**
Physiotherapist	<30	Male	0	0	1	145	47	12	**205**
		Female	0	0	10	302	125	27	**464**
	31-40	Male	1	0	4	140	53	3	**201**
		Female	3	0	15	316	138	5	**477**
	41-50	Male	0	0	0	35	6	0	**41**
		Female	2	0	4	101	15	0	**122**
	51-60	Male	0	0	0	15	0	0	**15**
		Female	0	0	0	18	1	0	**19**
	Total		**6**	**0**	**34**	**1072**	**385**	**47**	**1544**

Profession	Age	Gender	Ministry	State/ District	Institution	Hospitals	Clinic	Others	Total
Speech-Language Therapist	<30	Male	0	0	0	2	0	0	**2**
		Female	0	0	0	69	2	0	**71**
	31-40	Male	0	0	0	4	0	0	**4**
		Female	1	0	1	55	1	0	**58**
	41-50	Male	0	0	0	2	0	0	**2**
		Female	1	0	0	12	0	0	**13**
	51-60	Male	0	0	0	0	0	0	**0**
		Female	0	0	0	0	0	0	**0**
	Total		**2**	**0**	**1**	**144**	**3**	**0**	**150**
Radiation Therapist	<30	Male	0	0	6	22	0	0	**28**
		Female	0	0	20	74	0	0	**94**
	31-40	Male	0	0	18	31	0	0	**49**
		Female	0	0	15	52	0	0	**67**
	41-50	Male	1	0	7	17	0	0	**25**
		Female	1	0	10	23	0	0	**34**
	51-60	Male	0	0	0	0	0	0	**0**
		Female	0	0	0	1	0	0	**1**
	Total		**2**	**0**	**76**	**220**	**0**	**0**	**298**
Environmental Health Officer	<30	Male	1	895	0	15	0	2	**913**
		Female	0	362	0	7	0	0	**369**
	31-40	Male	15	1681	7	30	0	6	**1739**
		Female	18	769	3	17	0	4	**811**
	41-50	Male	38	735	5	20	0	5	**803**
		Female	8	103	3	3	0	2	**119**
	51-60	Male	19	304	1	5	0	4	**333**
		Female	0	0	0	0	0	0	**0**
	Total		**99**	**4849**	**19**	**97**	**0**	**23**	**5087**
Medical Laboratory Technologist	<30	Male	0	5	36	160	85	0	**286**
		Female	0	16	124	557	384	0	**1081**
	31-40	Male	0	21	63	527	269	0	**880**
		Female	0	63	150	1240	799	0	**2252**
	41-50	Male	0	14	13	213	69	0	**309**
		Female	2	34	75	550	281	0	**942**
	51-60	Male	3	7	7	123	30	0	**170**
		Female	0	7	13	98	49	0	**167**
	Total		**5**	**167**	**481**	**3468**	**1966**	**0**	**6087**
Optometrist	<30	Male	0	0	0	7	0	0	**7**
		Female	0	0	0	16	0	0	**16**
	31-40	Male	0	0	1	29	0	0	**30**
		Female	2	0	5	168	2	1	**178**
	41-50	Male	0	0	0	4	0	0	**4**
		Female	5	0	0	53	0	0	**58**
	51-60	Male	0	0	0	1	0	0	**1**
		Female	1	0	0	5	0	0	**6**
	Total		**8**	**0**	**6**	**283**	**2**	**1**	**300**

Source: Allied Health Division (2021)

Medical Graduates entering the workforce

Table 53: Number of Doctors Obtained Provisional Registration and Full Registration, 2010–2021

Year	Provisional Registration	Full Registration	Total number of Doctors in the workforce
2010	3256	2592	32979
2011	3708	3357	36607
2012	4094	3402	38718
2013	4472	3754	46916
2014	4740	3967	45565
2015	5146	4607	46491
2016	6253	4320	50087
2017	6150	4090	57831
2018	6075	4071	61158
2019	4999	5974	67586
2020	5218	4424	73996
2021	3867	5417	77755

Source: Malaysian Medical Council (2022)

REGIONAL DISTRIBUTION AND SKILL MIX

Table 54: Regional Distribution of Dental practitioner and Dental nurses / Dental Therapists (per 10,000 population), 2014–2021

Region	Dental Practitioner						Dental Nurse / Dental Therapist					
	2014	2016	2018	2019	2020	2021	2014	2016	2018	2019	2020	2021
Peninsular Malaysia West Coast	2.14	2.45	3.37	3.72	4.00	4.32	0.72	0.72	0.73	0.71	0.70	0.71
Peninsular Malaysia East Coast	2.21	2.8	3.49	3.92	4.13	4.42	1.2	1.18	1.17	1.15	1.14	1.15
Sabah & WP Labuan	0.99	1.12	1.23	1.42	1.54	1.81	1.06	0.96	0.99	0.94	0.95	0.99
Sarawak	1.49	1.66	1.89	1.98	2.10	2.21	1.58	1.49	1.43	1.43	1.42	1.46

Source: Ministry of Health (2015, 2017, 2019, 2021, 2022)

Table 55: Regional Distribution of Pharmacists and Assistant Pharmacists (per 10,000 population), 2014–2021

Region	Pharmacist						Assistant Pharmacist					
	2014	2016	2018	2019	2020	2021	2014	2016	2018	2019	2020	2021
Peninsular Malaysia West Coast	4.7	3.87	4.85	5.14	5.72	6.19	1.62	1.84	2.08	2.08	2.00	2.02
Peninsular Malaysia West Coast	2.87	2.46	3.19	3.57	4.01	4.32	1.92	1.85	1.96	1.96	1.91	1.96
Sabah & WP Labuan	2.53	1.76	2	2.20	2.51	2.81	1.51	1.42	1.42	1.44	2.06	1.43
Sarawak	3.7	2.89	3.55	3.56	4.03	4.44	1.88	1.86	1.88	1.88	1.84	1.87

Source: Ministry of Health (2015, 2017, 2019, 2021, 2022)

Table 56: Regional Distribution of Assistant Medical Officers (per 10,000 population), 2014–2021

Region	Assistant Medical Officers					
	2014	2016	2018	2019	2020	2021
Peninsular Malaysia West Coast	3.82	4.53	4.93	5.29	6.17	6.56
Peninsular Malaysia West Coast	5.07	5.97	7.24	7.58	8.76	8.63
Sabah & WP Labuan	4.07	4.49	4.9	5.26	6.05	6.4
Sarawak	6.26	6.73	7.98	8.41	9.36	9.92

Source: Ministry of Health (2015, 2017, 2019, 2021, 2022)

Table 57: Regional Distribution of Nurses and Community Nurses (per 10,000 population), 2014–2021

Region	Nurse						Community Nurse					
	2014	2016	2018	2019	2020	2021	2014	2016	2018	2019	2020	2021
Peninsular Malaysia West Coast	32.22	32.22	36.68	37.12	37.56	38.94	6.77	6.4	5.86	5.82	5.57	5.22
Peninsular Malaysia West Coast	25.3	25.62	29.14	29.59	30.73	31.73	11.16	10.95	10.13	10.10	9.57	9.30
Sabah & WP Labuan	20.42	21.16	22.28	21.19	21.84	24.53	11.29	10.28	9.53	9.60	8.95	8.33
Sarawak	24.53	24.93	25.66	25.76	26.46	29.21	12.26	11.04	9.52	9.30	8.63	7.14

Source: Ministry of Health (2015, 2017, 2019, 2021, 2022)

Table 58: Regional Distribution of MLT, Radiographers and Physiotherapists (per 10,000 Population), 2014–2021

Region	Radiographer					
	2014	2016	2018	2019	2020	2021
Peninsular Malaysia West Coast	0.89	0.88	0.88	0.88	0.93	0.99
Peninsular Malaysia East Coast	0.93	0.92	0.9	0.90	0.91	0.94
Sabah & WP Labuan	0.8	0.77	0.79	0.79	0.83	0.91
Sarawak	1.22	1.14	1.19	1.14	1.18	1.23

Region	MLT					
	2014	2016	2018	2019	2020	2021
Peninsular Malaysia West Coast	1.93	1.82	1.8	1.81	1.88	2.11
Peninsular Malaysia East Coast	2.36	2.23	2.21	2.20	2.26	2.61
Sabah & WP Labuan	2.16	2	1.96	1.96	1.96	2.52
Sarawak	3.13	2.96	2.95	2.94	2.89	3.43

Region	Physiotherapist					
	2014	2016	2018	2019	2020	2021
Peninsular Malaysia West Coast	0.4	0.39	0.4	0.41	0.40	0.44
Peninsular Malaysia East Coast	0.51	0.49	0.5	0.50	0.52	0.55
Sabah & WP Labuan	0.47	0.43	0.43	0.42	0.44	0.47
Sarawak	0.61	0.57	0.58	0.57	0.59	0.59

Source: Ministry of Health (2015, 2017, 2019, 2021, 2022)

Table 59: Regional Distribution of MLT, Radiographers and Physiotherapists (per 10,000 Population), 2014–2021

Specialist	Peninsular West Coast			Peninsular East Coast			Sabah & WP Labuan			Sarawak		
	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021
Specialist*	**1.68**	**1.72**	**1.84**	**1.34**	**1.38**	**1.41**	**0.77**	**0.77**	**0.85**	**1.17**	**1.14**	**1.11**

Note: Data from are for MOH employed only

Table 60: Comparison of Regional Distribution of Selected HRH in 2021

Location	Doctors	Assistant Medical Officer
Number per 10,000 population West Coast	25.07	6.56
Number per 10,000 population East Coast	20.71	8.63
Number per 10,000 population Sabah	12.86	6.40
Number per 10,000 population Sarawak	15.10	9.92
	Nurses	**Community Nurses**
Number per 10,000 population West Coast	38.94	5.22
Number per 10,000 population East Coast	31.73	9.30
Number per 10,000 population Sabah	24.53	8.33
Number per 10,000 population Sarawak	29.21	7.14
	Dentist	**Dental Nurses**
Number per 10,000 population West Coast	4.32	0.71
Number per 10,000 population East Coast	4.42	1.15
Number per 10,000 population Sabah	1.81	0.99
Number per 10,000 population Sarawak	2.21	1.46
	Pharmacist	**Assistant Pharmacist**
Number per 10,000 population West Coast	6.19	2.02
Number per 10,000 population East Coast	4.32	1.96
Number per 10,000 population Sabah	2.81	1.43
Number per 10,000 population Sarawak	4.44	1.87

Source: Ministry of Health (2022)

Table 61: Regional Distribution of Allied Health Personnel, 2018–2021

	2018				2019				2020				2021			
	WEST COAST	EAST COAST	SABAH	SARAWAK	WEST COAST	EAST COAST	SABAH	SARAWAK	WEST COAST	EAST COAST	SABAH	SARAWAK	WEST COAST	EAST COAST	SABAH	SARAWAK
Audiologist	137	30	14	9	137	29	14	10	136	29	14	10	142	30	15	11
Per 100,000 Population	**0.66**	**0.63**	**0.35**	**0.32**	**0.65**	**0.60**	**0.35**	**0.36**	**0.65**	**0.60**	**0.35**	**0.36**	**0.68**	**0.61**	**0.38**	**0.39**
Clinical Psychologist	25	3	1	3	24	1	1	4	24	2	1	4	30	5	1	6
Per 100,000 Population	**0.12**	**0.06**	**0.03**	**0.11**	**0.11**	**0.02**	**0.02**	**0.14**	**0.11**	**0.04**	**0.02**	**0.14**	**0.14**	**0.10**	**0.03**	**0.21**
Assistant Pharmacist	-	-	-	-	3966	942	577	530	4207	925	825	519	4254	959	562	528
Per 100000 Population	**-**	**-**	**-**	**-**	**18.92**	**19.60**	**14.42**	**18.84**	**20.04**	**19.09**	**20.58**	**18.43**	**20.25**	**19.62**	**14.29**	**18.71**
Clinical Scientist (Biochemist)	309	64	40	38	278	52	35	26	335	65	37	37	332	69	52	38
Per 100000 Population	**1.48**	**1.35**	**1.00**	**1.36**	**1.33**	**1.08**	**0.87**	**0.92**	**1.60**	**1.34**	**0.92**	**1.31**	**1.58**	**1.41**	**1.32**	**1.35**

	2018				2019				2020				2021			
	WEST COAST	EAST COAST	SABAH	SARAWAK	WEST COAST	EAST COAST	SABAH	SARAWAK	WEST COAST	EAST COAST	SABAH	SARAWAK	WEST COAST	EAST COAST	SABAH	SARAWAK
Clinical Scientist (Biomedical Scientist)	66	8	6	2	67	8	6	2	67	8	6	2	67	8	6	2
Per 100000 Population	**0.32**	**0.17**	**0.15**	**0.07**	**0.32**	**0.17**	**0.15**	**0.07**	**0.32**	**0.17**	**0.15**	**0.07**	**0.32**	**0.16**	**0.15**	**0.07**
Clinical Scientist (Embryologist)	6	2	2	0	7	2	2	0	7	2	2	0	10	2	2	0
Per 100000 Population	**0.03**	**0.04**	**0.05**	**0.00**	**0.03**	**0.04**	**0.05**	**0.00**	**0.03**	**0.04**	**0.05**	**0.00**	**0.048**	**0.041**	**0.051**	**0.000**
Clinical Scientist (Medical Geneticist)	-	-	-	-	21	0	0	0	23	0	0	0	23	0	0	0
Per 100000 Population		-	-	-	**0.10**	**0.00**	**0.00**	**0.00**	**0.11**	**0.00**	**0.00**	**0.00**	**0.11**	**0**	**0**	**0**
Dental Nurse	1509	555	381	487	1482	553	376	401	1471	554	380	400	1486	560	391	412
Per 100000 Population	**7.24**	**11.68**	**9.53**	**17.44**	**7.07**	**11.51**	**9.39**	**14.26**	**7.01**	**11.44**	**9.48**	**14.20**	**7.07**	**11.46**	**9.94**	**14.60**
Environmental Health Officer	N.A	N.A	N.A	N.A	139	35	26	17	124	33	20	14	2574	983	771	759
Per 100000 Population	-	-	-	-	**0.66**	**0.73**	**0.65**	**0.60**	**0.59**	**0.68**	**0.50**	**0.50**	**12.25**	**20.11**	**19.60**	**26.89**
Medical Sosial Officer	188	39	24	23	170	42	23	26	172	43	24	28	174	42	29	30
Per 100000 Population	**0.90**	**0.82**	**0.60**	**0.82**	**0.81**	**0.87**	**0.57**	**0.92**	**0.82**	**0.89**	**0.60**	**0.99**	**0.83**	**0.86**	**0.74**	**1.06**
Nutritionist	242	86	38	38	275	83	44	37	276	84	46	41	276	84	46	41
Per 100000 Population	**1.16**	**1.81**	**0.95**	**1.36**	**1.31**	**1.73**	**1.10**	**1.32**	**1.32**	**1.73**	**1.15**	**1.46**	**1.31**	**1.72**	**1.17**	**1.45**
Occupational Therapist	857	198	168	122	800	186	170	112	875	190	172	125	877	205	175	122
Per 100000 Population	**4.11**	**4.17**	**4.20**	**4.37**	**3.82**	**3.87**	**4.25**	**3.98**	**4.17**	**3.92**	**4.29**	**4.44**	**4.17**	**4.19**	**4.45**	**4.32**
Physiotherapist	938	270	183	167	941	272	175	156	941	272	175	156	941	272	175	156
Per 100000 Population	**4.50**	**5.68**	**4.58**	**5.98**	**4.49**	**5.66**	**4.37**	**5.55**	**4.48**	**5.61**	**4.37**	**5.54**	**4.48**	**5.56**	**4.45**	**5.53**
Radiation Therapist	-	-	44	60	195	0	43	63	197	0	43	59	197	0	43	58
Per 100000 Population	**-**	**-**	**1.10**	**2.15**	**0.93**	**0.00**	**1.07**	**2.24**	**0.94**	**0.00**	**1.07**	**2.09**	**0.94**	**0.00**	**1.09**	**2.06**
Speech Language Therapist	99	13	7	8	106	15	8	8	108	15	9	8	115	17	9	9
Per 100000 Population	**0.48**	**0.27**	**0.18**	**0.29**	**0.51**	**0.31**	**0.20**	**0.28**	**0.51**	**0.31**	**0.22**	**0.28**	**0.55**	**0.35**	**0.23**	**0.32**

Source: Allied Health Science Division (2022)

Table 62: Skill Mix Ratios of Selected Professionals to Allied Health Professionals in MOH

Selected Professionals to Allied Health Professionals	2013	2014	2018	2019	2020	2021
Doctor to dietitian	1:0.01	1:0.01	1:0.01	1: 0.006	1: 0.006	1: 0.006
Doctor to health education officer	1:0.004	1:0.008	1:0.005	1: 0.004	1: 0.003	1: 0.003
Doctor to medical social officer	1:0.01	1:0.01	1:0.006	1: 0.004	1: 0.004	1: 0.002
Doctor to counsellor	1:0.03	1:0.007	1:0.003	1: 0.002	1: 0.002	1: 0.002
Dietician to healthcare food service officer	1:1	1:0.98	1:0.78	1: 0.73	1: 0.79	1: 0.80

Source: Ministry of Health (2014, 2015, 2019,2020, 2021, 2022)

EDUCATION

Table 63: Allied Health Professional Training Programme, 2021

PROFESSION	PUBLIC			PRIVATE			TOTAL NO OF PROGRAMMES/ NO OF INSTITUTIONS
	Diploma	Degree	Subtotal programmes/ no of institutions	Diploma	Degree	Subtotal programmes/ no of institutions	
Audiologist	0	6	6/3	0	0	0	6/3
Clinical psychologist	0	4	4/3	0	6	6/4	10/7
Clinical scientist (biochemist)	0	9	9/3	0	1	1/1	10/4
Clinical scientist (biomedical scientist)	0	0	0	0	0	0/0	0/0
Clinical scientist (embryologist)	0	3	3/3	0	0	0/0	3/3
Clinical scientist (medical genetics)	0	0	0	0	0	0/0	0/0
Clinical scientist (microbiologist)		2	2/2	0	0	0/0	2/2
Counsellor	0	0	0	0	0	0/0	0/0
Dental therapist	1	0	1/1	0	0	0/0	0/0
Diagnostic radiographer	65	1	66/3	0	0	0/0	66/3
Dietician	0	9	9/4	0	0	0/0	9/4
Entomologist	0	3	3/2	0	0	0/0	3/2
Environmental health officer	166	6	172/4	0	6	6/2	178/6
Forensic science officer	0	0	0	0	0	0/0	0/0
Healthcare food service officer	5/6	1	7/12	0	0	0/0	7/12
Health education officer	0	0	0	0	0	0/0	0/0
Medical geneticist	0	0	0	0	0	0/0	0/0
Medical laboratory technologist	184	0	184/2	0	0	0/0	182/2
Medical physicist	0	1	1/1	0	0	0/0	1/1
Medical social officer	0	7	7/5	0	0	0/0	7/5
Nutritionist	0	0	0	0	0	0/0	0/0
Occupational therapist	0	6	6/3	0	2	2/1	8/4
Optometrist	0	2	2/2	0	2	2/2	4/4
Physiotherapist	48	4	52/6	0	5	5/3	57/9
Radiation therapist	0	0	0	0	0	0/0	0/0

PROFESSION	PUBLIC			PRIVATE			TOTAL NO OF PROGRAMMES/ NO OF INSTITUTIONS
	Diploma	Degree	Subtotal programmes/ no of institutions	Diploma	Degree	Subtotal programmes/ no of institutions	
Speech / language therapist	0	11	11/2	0	0	0/0	11/2
Traditional Complementary Medicine (TCM)	0	0	0	4	10	14/11	14/11

Source: Allied Health Science Division (2022)

Table 64: Table Entrants, Enrolment and Graduates for Public Sector Universities Doctors, Dental Practitioner, Pharmacists and Nurses, 2019–2021

PROFESSION	YEAR	EDUCATION LEVEL	CITIZENSHIP	ENTRANTS			ENROLMENT			GRADUATES		
				MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Doctors	2019	Matriculation	Malaysian	83	111	194	79	108	187	0	0	0
		Bachelor's Degree	Non-Malaysian	9	9	18	28	21	49	0	0	0
			Malaysian	398	810	1208	2,058	4,207	6265	410	799	1,209
		Masters	Non-Malaysian	36	31	67	103	88	191	17	28	45
			Malaysian	469	665	1134	2139	2937	5076	280	413	693
		PhD	Non-Malaysian	20	18	38	94	84	178	15	12	27
			Malaysian	57	98	155	196	460	656	23	60	83
	2020	Matriculation	Malaysian	60	91	151	61	91	152	0	0	0
		Bachelor's Degree	Non-Malaysian	7	9	16	36	28	64	0	2	2
			Malaysian	406	838	1244	2,143	4,419	6562	228	436	664
		Masters	Non-Malaysian	14	15	29	90	74	164	13	12	25
			Malaysian	101	220	321	1,946	2,688	4634	171	267	438
		PhD	Non-Malaysian	14	18	32	93	90	183	10	10	20
			Malaysian	52	127	179	212	504	716	25	57	82
	2021	Matriculation	Malaysian	74	127	201	78	130	208	0	0	0
		Bachelor's Degree	Non-Malaysian	9	21	30	44	50	94	1	0	1
			Malaysian	501	769	1270	2,439	4,628	7067	153	444	597
		Masters	Non-Malaysian	15	25	40	81	85	166	18	17	35
			Malaysian	177	295	472	1,894	2,700	4594	528	699	1227
		PhD	Non-Malaysian	42	30	72	119	107	226	13	11	24
			Malaysian	39	84	123	214	506	720	27	70	97

PROFESSION	YEAR	EDUCATION LEVEL	CITIZENSHIP	ENTRANTS			ENROLMENT			GRADUATES		
				MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Dental Practitioners	2019	Bachelor's Degree	Non-Malaysian	2	1	3	13	7	20	0	0	0
			Malaysian	87	237	324	402	1,246	1648	75	203	278
		Masters	Non-Malaysian	4	15	19	37	37	74	12	3	15
			Malaysian	28	61	89	79	189	268	12	26	38
		PhD	Non-Malaysian	15	7	22	56	32	88	8	6	14
			Malaysian	8	25	33	33	117	150	3	19	22
	2020	Bachelor's Degree	Non-Malaysian	1	1	2	13	8	21	0	0	0
			Malaysian	78	242	320	398	1,243	1641	78	244	322
		Masters	Non-Malaysian	5	6	11	30	31	61	12	12	24
			Malaysian	27	74	101	79	191	270	25	62	87
		PhD	Non-Malaysian	22	9	31	64	34	98	8	7	15
			Malaysian	16	45	61	40	145	185	7	17	24
	2021	Bachelor's Degree	Non-Malaysian		1	1	10	8	18	0	1	1
			Malaysian	93	192	285	434	1,328	1762	51	157	208
		Masters	Non-Malaysian	4	6	10	25	25	50	7	12	19
			Malaysian	24	64	88	78	192	270	24	62	86
		PhD	Non-Malaysian	24	34	58	84	67	151	3	3	6
			Malaysian	11	47	58	40	167	207	2	9	11
Pharmacist	2019	Diploma	Non-Malaysian									
			Malaysian	31	106	137	83	292	375	26	69	95
		Bachelor's Degree	Non-Malaysian	2	1	3	4	4	8	0	1	1
			Malaysian	76	296	372	344	1,065	1409	72	273	345
		Masters	Non-Malaysian	4	2	6	10	8	18	8	3	11
			Malaysian	14	45	59	40	80	120	21	52	73
		PhD	Non-Malaysian	33	10	43	90	32	122	18	8	26
			Malaysian	8	12	20	28	91	119	3	17	20
	2020	Diploma	Non-Malaysian	0	0	0	0	0	0	0	0	0
			Malaysian	32	87	119	97	296	393	14	79	93
		Bachelor's Degree	Non-Malaysian	0	1	1	4	4	8	0	0	0
			Malaysian	105	278	383	364	1,095	1459	79	245	324
		Masters	Non-Malaysian	1	3	4	5	8	13	3	2	5
			Malaysian	19	47	66	48	83	131	9	29	38
		PhD	Non-Malaysian	12	10	22	88	38	126	10	5	15
			Malaysian	7	23	30	30	98	128	3	18	21
	2021	Diploma	Non-Malaysian	0	0	0	0	0	0	0	0	0
			Malaysian	17	69	86	79	265	344	48	174	222
		Bachelor's Degree	Non-Malaysian	0	2	2	2	6	8	0	0	0
			Malaysian	100	292	392	381	1,085	1466	75	251	326
		Masters	Non-Malaysian	9	12	21	12	19	31	4	2	6
			Malaysian	23	51	74	45	91	136	26	48	74
		PhD	Non-Malaysian	32	22	54	106	57	163	8	4	12
			Malaysian	60	54	114	85	152	237	5	6	11

PROFESSION	YEAR	EDUCATION LEVEL	CITIZENSHIP	ENTRANTS			ENROLMENT			GRADUATES		
				MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Nurse	2019	Diploma	Non-Malaysian	0	1	1	0	1	1	0	0	0
			Malaysian	44	271	315	191	1,218	1409	59	339	398
		Bachelor's Degree	Non-Malaysian	1	1	2	2	3	5	0	0	0
			Malaysian	54	321	375	204	1,306	1510	22	206	228
		Masters	Non-Malaysian	3	2	5	7	5	12	1	0	1
			Malaysian	3	16	19	7	51	58	3	14	17
		PhD	Non-Malaysian	2	3	5	9	11	20	1	1	2
			Malaysian	0	7	7	5	28	33		2	2
	2020	Diploma	Non-Malaysian	0	0	0	0	1	1	0	0	0
			Malaysian	17	146	163	173	1,140	1313	35	260	295
		Bachelor's Degree	Non-Malaysian	0	2	2	2	3	5	0	0	0
			Malaysian	61	416	477	219	1,429	1648	34	201	235
		Masters	Non-Malaysian	1	3	4	7	7	14	1	1	2
			Malaysian	9	57	66	15	89	104	0	17	17
		PhD	Non-Malaysian	1	3	4	7	7	14	1	1	2
			Malaysian	9	57	66	15	89	104	0	17	17
	2021	Diploma	Non-Malaysian	0	0	0	0	1	1	0	0	0
			Malaysian	41	272	313	148	1,022	1170	52	340	392
		Bachelor's Degree	Non-Malaysian	0	0	0	2	2	4	0	1	1
			Malaysian	57	339	396	231	1,452	1683	53	380	433
		Masters	Non-Malaysian	1	7	8	2	12	14	3	3	6
			Malaysian	3	27	30	14	93	107	1	10	11
		PhD	Non-Malaysian	8	5	13	17	18	35	2	0	2
			Malaysian	0	2	2	4	36	40	1	1	2

Source: Ministry of Education (2022)

Table 65: Entrants, Enrolment and Graduates for Private Sector Universities, 2019–2021

PROFESSION	YEAR	EDUCATION LEVEL	CITIZENSHIP	ENTRANTS			ENROLMENT			GRADUATES		
				MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Doctors	2019	Bachelor's Degree	Malaysian	689	1309	1998	3781	6499	10280	895	1639	2534
			Non-Malaysian	188	277	465	623	912	1535	55	83	138
		Masters	Malaysian	13	9	22	39	59	98	9	8	17
			Non-Malaysian	2	4	6	8	21	29	2	6	8
		Ph.D	Malaysian	0	4	4	15	36	51	1	4	5
			Non-Malaysian	5	0	5	11	4	15	1	0	1
		Certificate	Malaysian	0	0	0	0	1	1	0	0	0
			Non-Malaysian	0	0	0	0	0	0	0	0	0
		Diploma	Malaysian	5	11	16	24	40	64	4	10	14
			Non-Malaysian	1	2	3	0	1	1	0	0	0
		Others	Malaysian	10	23	33	10	42	52	4	25	29
			Non-Malaysian	0	0	0	2	2	4	0	0	0

PROFESSION	YEAR	EDUCATION LEVEL	CITIZENSHIP	ENTRANTS			ENROLMENT			GRADUATES		
				MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Doctors	2020	Bachelor's Degree	Malaysian	634	1186	1820	3397	6356	9753	447	841	1288
			Non-Malaysian	145	244	389	687	1082	1769	27	58	85
		Masters	Malaysian	10	9	19	43	53	96	3	5	8
			Non-Malaysian	6	3	9	11	16	27	1	3	4
		Ph.D	Malaysian	7	11	18	21	44	65	0	0	0
			Non-Malaysian	0	1	1	12	5	17	1	0	1
		Certificate	Malaysian	0	0	0	1	1	2	0	0	0
			Non-Malaysian	0	0	0	0	0	0	0	0	0
		Diploma	Malaysian	20	68	88	125	465	590	2	0	2
			Non-Malaysian	0	0	0	0	1	1	0	0	0
		Others	Malaysian	0	0	0	0	15	15	0	0	0
			Non-Malaysian	0	0	0	0	0	0	1	1	2
	2021	Bachelor's Degree	Malaysian	680	1247	1927	3402	6443	9845	423	770	1193
			Non-Malaysian	159	239	398	767	1192	1959	60	87	147
		Masters	Malaysian	18	23	41	65	54	119	4	16	20
			Non-Malaysian	3	3	6	10	13	23	2	5	7
		Ph.D	Malaysian	2	0	2	6	14	20	1	3	4
			Non-Malaysian	3	1	4	13	5	18	1	0	1
		Certificate	Malaysian	0	0	0	0	0	0	0	0	0
			Non-Malaysian	0	0	0	0	0	0	0	0	0
		Diploma	Malaysian	36	90	126	84	252	336	22	95	117
			Non-Malaysian	0	0	0	0	0	0	0	0	0
		Others	Malaysian	0	0	0	0	0	0	0	0	0
			Non-Malaysian	0	0	0	0	0	0	0	0	0
Nurses	2019	Diploma	Malaysian	257	1888	2145	871	6765	7636	226	1602	1828
			Non-Malaysian	3	5	8	8	29	37	0	4	4
		Bachelor's Degree	Malaysian	36	529	565	210	3338	3548	19	288	307
			Non-Malaysian	14	43	57	10	106	116	1	6	7
		Post degree diploma	Malaysian	0	0	0	0	0	0	0	0	0
			Non-Malaysian	0	0	0	0	0	0	0	0	0
		Masters	Malaysian	0	9	9	14	372	386	4	6	10
			Non-Malaysian	1	0	1	2	4	6	0	0	0
		Ph.D	Malaysian	0	5	5	3	22	25	0	0	0
			Non-Malaysian	2	6	8	9	7	16	0	0	0
		Certificate	Malaysian	26	130	156	18	224	242	14	107	121
			Non-Malaysian	0	0	0	0	1	1	0	0	0
		Others	Malaysian	14	97	111	17	146	163	12	62	74
			Non-Malaysian	0	1	1	0	1	1	0	0	0
	2020	Diploma	Malaysian	286	2072	2358	973	7149	8122	115	903	1018
			Non-Malaysian	1	6	7	6	25	31	2	9	11
		Bachelor's Degree	Malaysian	31	273	304	85	1296	1381	23	243	266
			Non-Malaysian	4	15	19	12	39	51	0	2	2

PROFESSION	YEAR	EDUCATION LEVEL	CITIZENSHIP	ENTRANTS			ENROLMENT			GRADUATES		
				MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Nurses	2020	Masters	Malaysian	12	45	57	19	252	271	0	1	1
			Non-Malaysian	2	10	12	3	11	14	0	0	0
		Ph.D	Malaysian	0	4	4	2	25	27	0	0	0
			Non-Malaysian	1	5	6	5	5	10	0	0	0
		Certificate	Malaysian	15	135	150	25	305	330	11	131	142
			Non-Malaysian	0	0	0	0	1	1	0	0	0
		Others	Malaysian	3	38	41	8	104	112	7	26	33
			Non-Malaysian	0	0	0	0	0	0	0	0	0
	2021	Diploma	Malaysian	267	1944	2211	931	6957	7888	156	1262	1418
			Non-Malaysian	2	7	9	7	26	33	2	1	3
		Bachelor's Degree	Malaysian	28	224	252	84	1052	1136	21	316	337
			Non-Malaysian	2	15	17	11	54	65	0	4	4
		Masters	Malaysian	4	27	31	15	252	267	0	0	0
			Non-Malaysian	0	0	0	2	11	13	0	1	1
		Ph.D	Malaysian	1	8	9	2	31	33	0	0	0
			Non-Malaysian	2	5	7	8	13	21	0	0	0
		Certificate	Malaysian	15	195	210	30	316	346	14	152	166
			Non-Malaysian	0	0	0	0	1	1	0	0	0
		Others	Malaysian	3	98	101	12	151	163	4	45	49
			Non-Malaysian	0	1	1	0	1	1	0	0	0
Dentist	2019	Diploma	Malaysian	4	9	13	26	35	61	1	2	3
			Non-Malaysian	5	0	5	15	4	19	2	0	2
		Bachelor's Degree	Malaysian	92	234	326	722	1683	2405	162	279	441
			Non-Malaysian	4	6	10	21	33	54	0	4	4
		Post degree diploma	Malaysian	0	0	0	0	0	0	0	0	0
			Non-Malaysian	0	0	0	0	0	0	0	0	0
		Masters	Malaysian	5	3	8	6	9	15	0	5	5
			Non-Malaysian	0	0	0	0	0	0	0	0	0
		Ph.D	Malaysian	0	0	0	3	5	8	0	0	0
			Non-Malaysian	0	0	0	0	1	1	0	0	0
		Certificate	Malaysian	0	0	0	0	0	0	1	0	1
			Non-Malaysian	0	0	0	0	0	0	0	0	0
		Others	Malaysian	0	0	0	26	48	74	8	9	17
			Non-Malaysian	0	0	0	0	0	0	0	0	0
	2020	Diploma	Malaysian	4	10	14	15	40	55	2	4	6
			Non-Malaysian	0	0	0	9	5	14	1	0	1
		Bachelor's Degree	Malaysian	77	254	331	596	1564	2160	79	166	245
			Non-Malaysian	6	8	14	31	40	71	0	1	1
		Post degree diploma	Malaysian	0	0	0	0	0	0	0	0	0
			Non-Malaysian	0	0	0	0	0	0	0	0	0
		Masters	Malaysian	2	7	9	14	13	27	0	0	0
			Non-Malaysian	0	0	0	1	0	1	0	0	0

PROFESSION	YEAR	EDUCATION LEVEL	CITIZENSHIP	ENTRANTS			ENROLMENT			GRADUATES		
				MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Dentist		Ph.D	Malaysian	4	23	27	4	24	28	0	0	0
			Non-Malaysian	0	0	0	0	1	1	0	0	0
		Certificate	Malaysian	0	0	0	0	0	0	0	0	0
			Non-Malaysian	0	0	0	0	0	0	0	0	0
		Diploma	Malaysian	0	0	0	0	0	0	0	0	0
			Non-Malaysian	0	0	0	0	0	0	0	0	0
		Others	Malaysian	0	0	0	18	44	62	0	0	0
			Non-Malaysian	0	0	0	0	0	0	0	0	0
	2021	Diploma	Malaysian	6	11	17	17	46	63	0	0	0
			Non-Malaysian	0	0	0	10	4	14	0	1	1
		Bachelor's Degree	Malaysian	70	231	301	501	1416	1917	78	176	254
			Non-Malaysian	2	3	5	29	41	70	2	4	6
		Masters	Malaysian	5	7	12	11	14	25	0	0	0
			Non-Malaysian	0	0	0	1	0	1	0	0	0
		Ph.D	Malaysian	0	0	0	4	2	6	0	0	0
			Non-Malaysian	0	0	0	0	0	0	0	0	0
		Certificate	Malaysian	0	0	0	0	0	0	0	0	0
			Non-Malaysian	0	0	0	0	0	0	0	0	0
		Others	Malaysian	0	0	0	0	0	0	0	0	0
			Non-Malaysian	0	0	0	0	0	0	0	0	0
Pharmacists	2019	Diploma	Malaysian	178	701	879	632	2557	3189	92	447	539
			Non-Malaysian	0	2	2	3	8	11	1	0	1
		Bachelor's Degree	Malaysian	154	515	669	916	2779	3695	233	845	1078
			Non-Malaysian	4	19	23	20	28	48	2	2	4
		Masters	Malaysian	14	35	49	20	62	82	5	23	28
			Non-Malaysian	8	4	12	18	12	30	4	10	14
		Ph.D	Malaysian	1	2	3	2	11	13	0	0	0
			Non-Malaysian	3	3	6	4	4	8	1	0	1
		Certificate	Malaysian	0	1	1	0	1	1	0	0	0
			Non-Malaysian	0	0	0	0	0	0	0	0	0
		Others	Malaysian	0	0	0	64	103	167	0	1	1
			Non-Malaysian	0	0	0	0	0	0	0	0	0
	2020	Diploma	Malaysian	144	708	852	730	3137	3867	41	228	269
			Non-Malaysian	0	3	3	4	9	13	0	0	0
		Bachelor's Degree	Malaysian	137	566	703	630	2152	2782	139	463	602
			Non-Malaysian	7	16	23	22	42	64	0	1	1
		Masters	Malaysian	12	17	29	32	61	93	1	4	5
			Non-Malaysian	5	9	14	14	10	24	1	6	7
		Ph.D	Malaysian	5	3	8	6	9	15	0	0	0
			Non-Malaysian	1	0	1	7	4	11	0	0	0
		Certificate	Malaysian	0	1	1	0	1	1	0	0	0
			Non-Malaysian	0	0	0	0	0	0	0	0	0

PROFESSION	YEAR	EDUCATION LEVEL	CITIZENSHIP	ENTRANTS			ENROLMENT			GRADUATES		
				MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
	2021	Others	Malaysian	0	0	0	9	16	25	0	0	0
			Non-Malaysian	0	0	0	0	0	0	0	0	0
		Diploma	Malaysian	164	820	984	633	2823	3456	106	472	578
			Non-Malaysian	0	4	4	3	11	14	0	1	1
		Bachelor's Degree	Malaysian	184	601	785	628	2064	2692	130	463	593
			Non-Malaysian	7	10	17	24	43	67	1	2	3
		Masters	Malaysian	8	23	31	29	58	87	7	24	31
			Non-Malaysian	8	9	17	12	16	28	6	2	8
		Ph.D	Malaysian	10	11	21	16	20	36	0	1	1
			Non-Malaysian	4	7	11	10	11	21	2	0	2
		Certificate	Malaysian	0	0	0	0	0	0	0	0	0
			Non-Malaysian	0	0	0	0	0	0	0	0	0
		Others	Malaysian	0	0	0	0	0	0	0	0	0
			Non-Malaysian	0	0	0	0	0	0	0	0	0

Source: Ministry of Education (2022)

ANNEX 3: LIST OF SPECIALITIES IN MALAYSIA

Table 66: List of speciality, sub-speciality and field of practice in Malaysia

Specialty		Field of Practice	
1.	Anaesthesiology	i.	Anaesthesiology and Critical Care
		ii.	Intensive Care
2.	Emergency Medicine	i.	Emergency Medicine
3.	Family Medicine	i.	Family Medicine
4.	Internal Medicine	i.	Internal Medicine
		ii.	Cardiology
		iii.	Clinical Haematology
		iv.	Dermatology
		v.	Endocrinology
		vi.	Gastroenterology & Hepatology
		vii.	Geriatric Medicine
		viii.	Infectious Diseases
		ix.	Intensive Care Medicine
		x.	Nephrology
		xi.	Neurology
		xii.	Medical Oncology
		xiii.	Palliative Medicine
		xiv.	Respiratory Medicine
		xv.	Rheumatology
5.	Nuclear Medicine	i.	Nuclear Medicine
6.	Rehabilitation Medicine	i.	Rehabilitation Medicine
7.	Sports Medicine	i.	Sports Medicine
8.	Oncology	i.	Clinical Oncology
		ii.	Radiation Oncology
9.	Clinical Radiology	i.	Clinical radiology
10.	General Paediatrics	i.	General Paediatrics
		ii.	Adolescent Medicine
		iii.	Clinical Genetics
		iv.	Developmental Paediatrics
		v.	Neonatology
		vi.	Paediatrics And Child Health
		vii.	Paediatric Cardiology
		viii.	Paediatric Dermatology
		ix.	Paediatric Endocrinology
		x.	Paediatric Gastroenterology
		xi.	Paediatric Haematology & Oncology
		xii.	Paediatric Infectious Diseases
		xiii.	Paediatric Intensive Care
		xiv.	Paediatric Nephrology
		xv.	Paediatric Neurology
		xvi.	Paediatric Respiratory Medicine
		xvii.	Paediatric Rheumatology

Specialty		Field of Practice	
11.	General Pathology	i.	General Pathology
12.	Anatomical Pathology	i.	Anatomical Pathology
13.	Chemical Pathology	i.	Chemical Pathology
		ii.	Chemical Pathology (Metabolic Medicine)
14.	Haematology	i.	Haematology
15.	Medical Microbiology	i.	Medical Microbiology
16.	Forensic Pathology	i.	Forensic Pathology
17.	Transfusion Medicine	i.	Transfusion Medicine
18.	Psychiatry	i.	Psychiatry
		ii.	Child And Adolescent Psychiatry
		iii.	Forensic Psychiatry
19.	Public Health	i.	Public Health Medicine
		ii.	Communicable Disease
		iii.	Non-Communicable Disease
		iv.	Epidemiology
		v.	Family Health
		vi.	Health Management
		vii.	Occupational Health
		viii.	Environmental Health
		ix.	Military Medicine
20.	Obstetrics and Gynaecology	i.	Obstetrics And Gynaecology
		ii.	Gynae-Oncology
		iii.	Maternal Fetal Medicine
		iv.	Reproductive Medicine
		v.	Uro-Gynaecology
21.	General Surgery	i.	GeneralIT Surgery
		ii.	Vascular Surgery
22.	Cardiothoracic Surgery	i.	Cardiothoracic Surgery
23.	Neurosurgery	i.	Neurosurgery
24.	Paediatric Surgery	i.	Paediatric Surgery
25.	Plastic Surgery	i.	Plastic Surgery
26.	Ophthalmology	i.	Ophthalmology
27.	Otorhinolaryngology	i.	Otorhinolaryngology
28.	Orthopaedic Surgery	i.	Orthopaedic Surgery
		ii.	Spine Surgery
		iii.	Arthoplasty
		iv.	Upper Limb & Microsurgery
		v.	Arthroscopy & Sport Surgery
		vi.	Paediatric Orthopaedics
		vii.	Foot & Ankle
		viii.	Orthopaedic Oncology
		ix.	Advanced Musculoskeletal Trauma
29.	Urology	i.	Urology

ANNEX 4: KEY LEGISLATION GOVERNING THE PROFESSIONAL PRACTICE OF HRH IN MALAYSIA

Table 67: Key Legislation in Malaysia

PROFESSIONALS	KEY LEGISTATION	STATUTORY BOARD
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 under the Act	Malaysian Dental Council
Pharmacist	Registrations 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 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 2011and Food Analyst Regulation 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 1982 (Act 304)	Atomic Energy Licensing Board
Diagnostic Radiographer	Atomic Energy Licensing Act 1982 (Act 304)	Atomic Energy Licensing Board
Radiation Therapist	Atomic Energy Licensing Act 1982 (Act 304)	Atomic Energy Licensing Board
Environmental Health Officer	Destruction of Disease Bearing Insect (Act 154)	Ministry of Health
Environmental Health Officer	Prevention and Control of Infectious Diseases Act 1988 (Act 342)	Ministry of Health

ANNEX 5: DATA AVAILABILITY AND QUALITY

Table 68: Sources of HRH Data and Scope of Data from Each Source

Source	Scope	Data that is compiled and routinely available
Human Resource Management (Information System HRMIS)	Public sector Federal and State Levels, including MOH and state health department	Service records: • Postings & promotions • Wages • Leave • Disciplinary action
HR Division, MOH	Ministry of Health employees	• Posts for each category of staff • New employees, retirement, vacancies • Postings (i.e state & hospital distribution) • Age and gender • Promotions • Wages • Source of qualification for new entrants

Health Informatics Centre	• **Health status**
	• **HR Information** submitted by
	  * Statutory Boards
	  * Program Divisions in MOH
		• Numbers of staff (selected categories)
		• Public & Private sector distribution (only for some categories)

Statutory Boards (nationwide coverage)	• Medical • Dental • Pharmacy • Nursing (including midwifery) • Assistant Medical Officers • Opticians & Optimetrists • Food Analysts • Counsellors	• Numbers • Public and Private sectors • Accredited training programs • Disciplinary action on registered practitioners • Intake and output of MOH training institutions
National Specialist Register (aims to become nationwide coverage)	Accredited Medical Specialist Practitioners	Register is of recent origin, and currently data is incomplete
Ministry of Education (MOE) Ministry of Defence (MOD)	Public Sector Universities MOD hospitals and clinics	

Table 69: Summary of Data Discrepancies and Key Data that are not available for HRH Planning

Sectors / Inter agencies / Ministries	Discrepancies
• Intra-MOH (Ministry of Health) • HR Division • Program Divisions • Statutory Boards • Health Informatics Centre	• Differing definitions of some categories: (example: Doctors in managerial positions at federal and state level do not apply for Annual Practicing Certificate- hence are not counted in statutory board but are included in HR Division. • Differing numbers: collection or clerical errors • Data not routinely analysed (example: age, gender, location of practice) • Private sector information is missing or incomplete (Example: incomplete registration and enforcement- limited capacity of Statutory Boards; • Data on private sector clinic staff is collected but not compiled or reported
	• **Data that is collected but not analysed or reported**
• Other public sector agencies (Ministry of Education, MQA, Ministry of Defence)	• Data that is not routinely reported HRH in: • Universities (including hospitals & clinics) • MINDEF hospitals • Other public sector agencies
• Private Sector	• Data that is collected but not compiled or reported • HRH in private hospitals and free-standing clinics & pharmacies is routinely collected by statutory boards • (Currently analysis is dependent on periodic surveys, limited to hospitals)
• Education of HRH • Ministry of Education • MQA • Statutory Boards • Public services department	• Data is collected but not compiled or reported include • Training institutions (number, type) • Annual intake and output of each institution • Numbers sponsored by government for basic training in overseas countries
Data that is NOT collected	
• Attrition between graduation and entry into HRH workforce	
• Under-employment and unemployment of trained HRH	
• Emigration (out-migration) of Malaysian HRH professionals	

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