TECHNICAL REPORT

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KEMENTERIAN KESIHATAN MALAYSIA

PROFILE OF ALLIED HEALTH PROFESSIONS IN MINISTRY OF HEALTH MALAYSIA

A Consultation Report By WHO

Allied Health Sciences Division
Medical Programme
Ministry of Health, Malaysia

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Profile of Allied Health Professions in Ministry of Health Malaysia
A Consultation Report by World Health Organization (WHO)

The Report is prepared for the Ministry of Health Malaysia (MOH) by
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- AHP Head of Professions and AHP Research Committee

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List of Abbreviations

7MP	7th Malaysia Plan
AHP	Allied Health Professions
AHPA	Allied Health Professions Act
AIDS	Acquired Immunodeficiency Syndrome
AHSD	Allied Health Sciences Division
AMIS	AHP Management Information System
AMO	Assistant Medical Officers
ASEAN	Association of Southeast Asian Nations
CICU	Cardiac Intensive Care Unit
CP	Clinical Psychologist
CPD	Continuing Professional Development
CT	Computed Tomography
CVD	Cardiovascular disease
DG	Director General
DOS	Department of Statistics
DR+RT	Diagnostic Radiographer + Radiation Therapist
GDP	Gross Domestic Product
HIC	Health Informatics Centre
HIT	Health Systems in Transition
HIV	Human Immunodeficiency Viruses
HPV	Human Papillomavirus
HR	Human Resource
HRH	Human Resource for Health
ICT	Information Communication Technology
ICU	Intensive Care Unit
ISCO	International Standard Classification of Occupations
MACB	Malaysian Association of Clinical Biochemist
MAHPC	Malaysian Allied Health Professions Council
MCH	Maternal and Child Health
MDA	Malaysian Dietitians' Association
MMT	Methadone Maintenance Therapy
MNHA	Malaysia National Health Accounts
MOHE	Ministry of Higher Education
MOH	Ministry of Health
MQA	Malaysian Qualifications Agency
NCC	National Credentialing Committee
NCD	Non-communicable Disease
NGO	Non-Governmental Organization
NHMS	National Health Morbidity Survey
NSEP	Needle & Syringe Exchange Programme
OOP	Out-of-Pocket
PG Dip	Post-graduates Diploma
PHC	Primary Health Care
PHD	A Doctor of Philosophy
PPP	Public/Private Partnerships
QUALICOPC	Quality and Costs of Primary Care
REAP	Reviewed Approach of Primary Health Care
SDGs	Sustainable Development Goals
SME	Subject Matter Expert
SOP	Standard Operation Procedure
STI	Sexually transmitted infections
TB	Tuberculosis
THE	Total Health Expenditure
UHC	Universal Health Coverage
WHO	World Health Organization
WISN	Workforce Indicators Staffing Needs
WPRO	Western Pacific Regional Office

Executive Summary

The technical report on the status of the Allied Health Professions (AHP) in Malaysia is based on consultation with key stakeholders. The preparation of the report commenced with a Consultation meeting convened by the Allied Health Sciences Division (AHSD), Medical Programme, Ministry of Health (MOH) Malaysia, with support of the WHO Country Office and international consultant in January 2019. The proceeding of the consultation meeting is included in this report. The five (5) days meeting enabled review of the current situation and led to the formulation of an Action Plan for further review and analysis. With the AHSD as the focal point for this review, several task forces were established to obtain information and provide guidance on key areas, issues and challenges. The strategic directions for the AHP development in the context of the Malaysia health system and planning for the development of the health workforce, the profile of the current AHP workforce, the distribution of the AHP workforce, its contribution to the health system, its training and licensing were addressed.

The supplementary to this technical report include a report on a rapid appraisal of the respective categories of staff including details about their competencies and training as well as a Projection Model customised to the Malaysia context which provides estimates of the required AHP workforce production and recruitment over the next 10 years based on explicit staffing assumptions at all levels of the health system (health facilities, administration and academic/research). The scope of the Projection Model is limited at this stage to the Ministry of Health in the public sector but could be extended to the private sector once further data are obtained through the licensing and registration of all practitioners.

Key observations made in this report follow

Status of AHP Workforce

1. The development of the AHP in Malaysia is currently being implemented in line with the enactment of the Allied Health Professions Act 774. This report details recent and ongoing efforts to enumerate and describe the characteristics, deployment, training and registration of allied health practitioners in Malaysia.

2. There are 30 categories of AHP in MOH divided into Clinical, Laboratory and Public Health groups numbering 31,130 practitioners – a significant national health resource.

3. Detailed information is now compiled related to MOH's current workforce, such as gender, age, race, length of career, deployment, training, vacancies, and many other potentially informative indicators.

4. This information, compiled by the AHSD, supplements the Ministry of Health (MOH) Malaysia's human resources for health in 12th Malaysia Plan 2021-2025 by providing previously unavailable information on professions on the fringe of strategic health policy.

5. This information now allows for the inclusion of AHP in the Malaysian Health System's strategic direction in its response to emerging demographic and health trends.

6. Historically, the lack of information derived from research into AHP practice has impeded the development of AHP policy on their roles and functions within health systems.

AHP in the Malaysian Health System

7. The Malaysian population is ageing. The shift in the epidemiological picture towards non-communicable diseases and increasing longevity has led to a growing emphasis on the need for a wider range of skills to be accessible through the health care system. Thus, the health policy in response to non-communicable diseases and ageing now is focusing on rehabilitation, disease and disability prevention in community settings.

8. Currently the majority of AHP in Malaysia are located in clinical settings and relatively few professions are considered in public health.

Policy change is needed to provide greater community access to AHP to complement traditional health services and provide community-based care.

9. To achieve this, during a period of limited public sector growth will require a transition policy and processes that look towards outreach rather than centralisation. This transition may not be limited to existing professions and services and will necessarily involve retraining and supervision.

10. AHP need to initiate ongoing dialogue with other professions to identify opportunities for collaboration via a public-private partnership or forming multi-skilled teams to provide continuity of care and rehabilitation.

11. AHP need involvement in health research and acquire MOH research funding for evidencing their contribution to the population health and the effectiveness of working in multidisciplinary and interdisciplinary health care delivery.

12. The current challenge for AHSD in a reformed health system is to develop policies on staffing targets/norms for AHP at different service levels and settings and to apply the norms in policy formulation and advocacy for resources.

13. A multi-skilled/multi-tasking team approaches offer some potential to meet increasing demand and contain costs by realigning the AHP roles in healthcare.

14. An increase in professions of allied health activity in the private sector is anticipated.

15. The major training AHP issues related to the training opportunities are the proliferation of training schools, large numbers of graduates, few public sector vacancies, and the standardisation of curriculum design for MQA accreditation.

16. A continuing strategic dialogue between the MOH and Higher Education will result in improved planning for intakes, curriculum content and forecast feasible career pathways.

17. There is a need to develop a comprehensive framework of credentialing, competency, and capability linked with allied health professions' career development.

This consultation represents a significant development in the process of implementing the Allied Health Professions Act 774. The report highlights the great importance of continuing dialogue between the MOH and MOHE to produce and govern the AHP that Malaysia will need in the future. Therefore, this report represents the beginnings of developments that will provide greater visibility to the AHP and awareness of their roles and contributions; and promote the formulation of policy and implementation of actions and dialogue needed to consolidate AHP services in the evolving provision of health care in Malaysia.

However, it should be stressed that this report must be regarded as a work in progress rather than a definitive response to all the challenges, opportunities and/or constraints. It is noted; that in the absence of a cohesive data system, some data on AHP is incomplete and/or inconsistent; that not enough is known about the utilisation of services provided by the AHP and the workload they are experiencing and most importantly, that at this stage the fast growing private sector that employs a huge number of the AHP workforce is not included in the analysis.

The January 2019 Consultation Meeting and Recommendations for Action Plan

I. Access timely information concerning the AHP workforce

a. Create an inventory of existing data collections concerning the AHP workforce

- Map the data kept in each system, the source and method of collection
- Explore the potential for sharing and/or integrating available information
- Determine procedures for validation of data

b. Develop an AHP Management Information System (AMIS) with the capacity to generate relevant reports for planning and management

c. To confirm what data will be included in the AMIS

d. Develop SOP for obtaining and updating AHP personnel information from jurisdictions that employ allied health practitioners

e. Link the AMIS with the Information system of the AHP Registration System

II. Project future requirements for production, employment and retention of AHP

a. Complete development of the AHP Projection Model

- Enter the required data for the AHP Projection Model with priority to AHP that contribute to services at the Health Clinics
- Confirm accuracy of data through cross-validation with data systems kept by employing jurisdiction, professional associations and other sources
- Conduct consultations with stakeholders (including other MOH Departments, employing jurisdictions, professional associations, and experienced practitioners) concerning reasonable staffing norms/ targets as a basis for estimating the health system requirements for AHP at health facilities at all levels

b. Initiate research activities to gather evidence concerning deployment and utilisation of AHP to identify priorities and gaps

c. Study the supply-demand chain for each profession

III. Align AHP policy and programs with government policy priorities

a. To align AHP human resources and services with national health policy to enhance primary health care, focusing on disease prevention and health promotion at the Health Clinics as a priority.

- Shifting the relative balance of care provision from acute to primary
- A health and well-being approach, with an upgraded focus on disease prevention and population health.

b. Explore new and flexible models of care

- Review the Scope of Service and SOP of AHP to identify opportunities for better interprofessional collaboration and teamwork (e.g. in providing integrated programs for aged care)
- Role delineation from health development strategy for AHP to be included in any national strategic plan for health
- Consider benchmarks of best practice from the region to facilitate the choice of an appropriate policy

c. Demonstrate the need for reallocation of resources to fulfil government policy to promote primary care, public health and extend 'services to the home'

d. Review current AHP career pathway (job promotion, Subject Matter Expert-SME, allied health speciality)

IV. Strengthen the cooperation and partnership among stakeholders across the public and private health sectors

a. Strengthen coordination between service providers, institutions and the AHP planning and management authorities

b. Enhance communication between departments, other government agencies, universities, NGOs and private sector organisations

c. Formulate policies and regulations that encourage partnerships

d. Explore possibilities and benefits for outsourcing certain AHP services to the private-sector with consideration of cost and implications for Out-of-Pocket (OOP) expenditures

- Explore the benefits of government subsidy for certain services to encourage the use of private sector providers
- Ensure quality management is maintained through self-regulating professional association licensing and by government-managed complaints processes

V. Strengthen the status and recognition of the AHP contribution to the Malaysian health system

a. Demonstrate cost efficiencies and benefits to community health through upscaling deployment of AHP in primary health care and curative settings

b. Disseminate information concerning the competencies of AHP and their existing and potential contribution to health care at all levels

- AHP roles in speciality & subspecialty to be recognised by medical specialists

c. Enhance the proficiency of the AHP by upgrading professional qualifications (diploma to degree and higher)

d. Decide criteria of dual-qualifications registration and criteria for registration of diploma and degree holders

VI. Promote quality education and career progression for the AHP workforce

a. Formulate policies and regulations concerning the production of AHP

b. Improve collaboration and coordination regarding the production of AHP and the capacity of the health-care system to support training and absorb graduates

- Need for more coordination between MOHE and MOH as many AHP graduates are unemployed due to a limited number of public sector vacancies

c. Need to strengthen capacity to predict yearly recruitment requirements for each profession

d. Need for consistency in training programs and minimum standards

e. Need to determine and validate criteria for licensing and registration of AHP to ensure the requirements are equivalence across graduates from different institutions

INTRODUCTION

1. Introduction

This Technical Report provides recent information to supplement the Ministry of Health (MOH) Malaysia's human resources for health in 12th Malaysia Plan 2021-2025 with current data on the Allied Health Professions (AHP) in MOH. This technical report was prepared as part of a WHO consultancy in collaboration with the Allied Health Sciences Division (AHSD) of the MOH. The document provides a snapshot of the status of the AHP in MOH and identifies relevant issues for the reform and direction of AHP deployment in response to demographic and epidemiological changes, better service outcomes, new service provision and enhanced productivity through interdisciplinary and public-private collaboration.

Allied health professionals are regarded as the third pillar of health care in Malaysia after doctors and nurses and represent almost a third of the country's health care workforce. The allied health workforce is represented by a diverse range of professions. Each profession has specific qualifications, expertise, training pathways, nature of job and service delivery requirements.

There are more than 30 categories of AHP practising in hospitals, health clinics, research institutions, laboratories, academic, and community in Malaysia's public and private sectors. The schematic overview of the Malaysian health system in review 2013 locates AHP predominantly in the MOH. Many are employed at private hospitals, environmental and vector control in local government, academics, pharmacies, laboratories in the private sector and self-employed. Currently, there are more than 31,000 allied health practitioners delivering direct patient care or providing support in prevention, promotive, diagnosis, treatment and rehabilitation in MOH.

The development of AHP in Malaysia follows the enactment of the Allied Health Professions Act 774. The Act mandates the registration and licensing of the allied health practitioners and sets quality standards and regulations. Though; only 23 categories of AHP are listed under the Allied Health Professions Act 774 gazette in 2016, the activities of other professions are governed by different Acts and regulations. It is estimated more than 40,000 AHP will be registered and regulated under Act 774 from the public and private sector in Malaysia.

As in many countries, the AHP have yet to achieve comparable visibility in the reform of health care in response to Malaysia's health system. AHP in Malaysia require more collaboration on common issues, engagement in research to validate their roles and contributions in population health and consolidating their roles in multidisciplinary and interdisciplinary health care delivery model. In some countries, the AHP are now collaborating through national or state peak AHP bodies to establish professional standards and systems of continuous education.

MALAYSIA CONTEXT

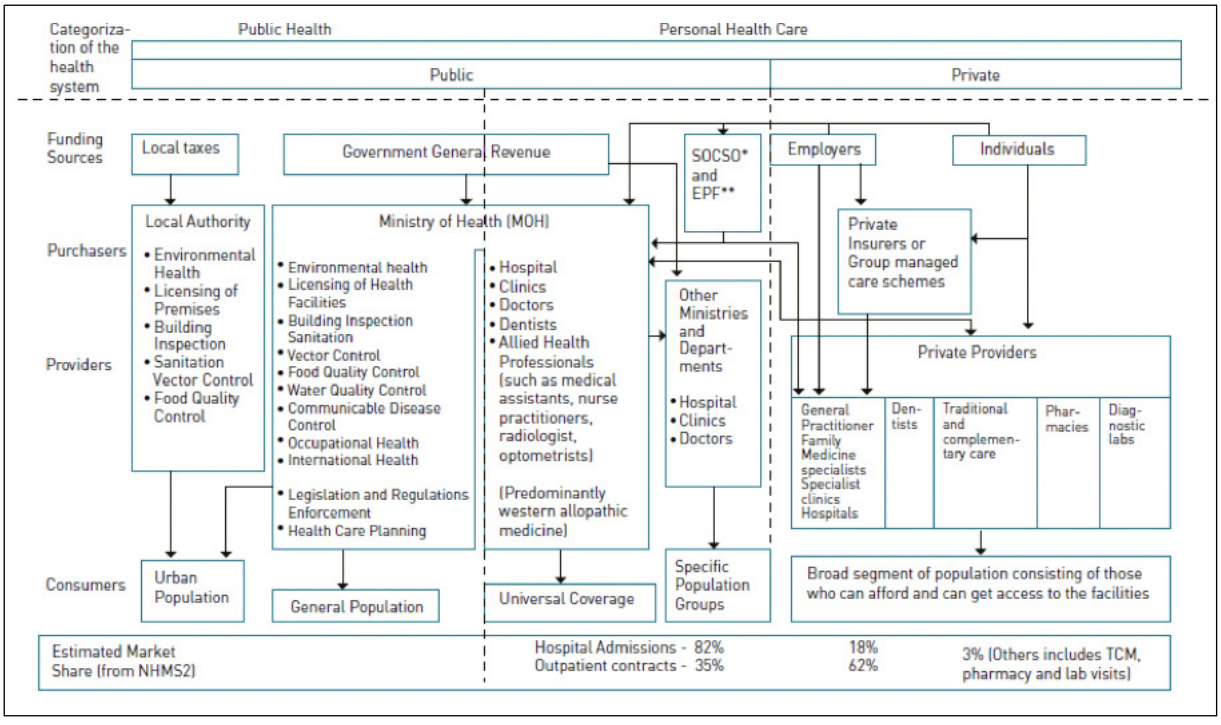
2. Malaysia Context

2.1. The Malaysia Health System

Malaysia is classified as an upper-middle-income country with aspirations for achieving high-income status. Malaysia has been acknowledged globally for a high performing health system based on a well-trained workforce, excellent infrastructure and quality service delivery. It has a low incidence of catastrophic and impoverishing health care expenditure. Malaysia has a dichotomous yet synergistic public-private healthcare services model (Figure 2-1).

The health care system is funded through general revenue and taxation to provide both universal and comprehensive health care and a co-existing private healthcare system. In public health facilities, the clients pay only nominal fees for access to both outpatient services and hospital admissions, while the private sector is sustained through out-of-pocket payments and some private health insurance.

Figure 2-1: Schematic Overview of the Malaysian Health System



Source: Hussein, RH, Asia Pacific Region Country Health Financing Profiles: Malaysia, Institute for Health Systems Research

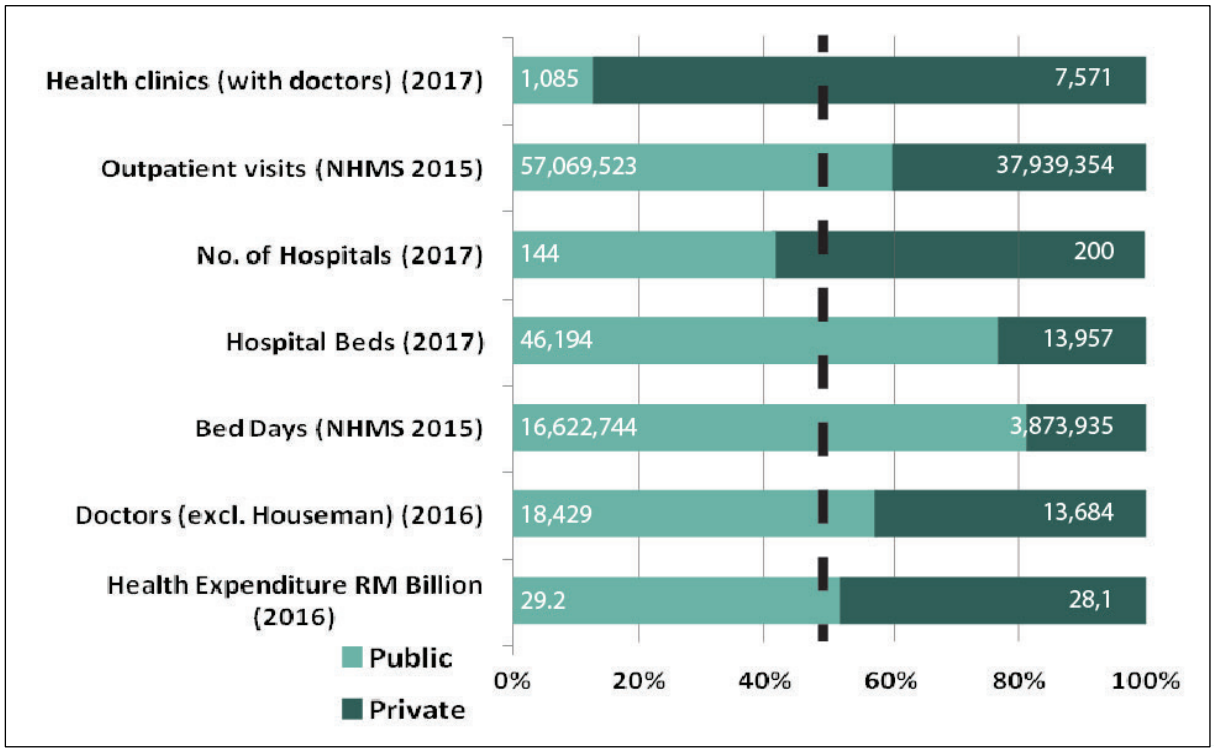
Malaysia provides universal access to health care for all its citizens. Public healthcare is administered by the ministries in government and serves majority of the population in Malaysia (Figure 2-2). The Ministry of Health (MOH) is the main provider of health care services in the public sector. There are 144 hospitals, 9 special medical institutions, 1,090 health clinics and 1,791 community clinics in MOH. In addition, another ten hospitals from Ministry of Higher Education, Ministry of Defence, Department of Aboriginal (Orang Asli) Affairs, Department of Social Welfare, Ministry of Home Affairs, Ministry of Housing and Local Government are also providing health services in the public sector. MOH provides comprehensive health services including health promotion, disease prevention, curative and rehabilitative care in health clinics, hospitals, community, long term care in special institutions. The MOH governs and develops the health sector by formulating policies, strategic planning, legislation, management of budget, human resource planning and deployment, monitoring and evaluation of programmes, supporting research and quality improvement initiatives, training and coordinating external aid. Doctors, nurses, pharmacists, dentists and other allied healthcare workers are employed

and deployed at all levels including rural clinics, district hospitals and tertiary specialist hospitals throughout the country.

In economic transition, urban areas are experiencing growth in the private sector providing primary and specialist care. The private sector is rapidly developing and is accessed predominantly by patients with private health insurance and by those who can afford the higher fees. Private healthcare comprises private medical centres, private hospitals, specialist or general practitioner clinics, dental clinics, pharmacists and diagnostic laboratories. Currently, there are 210 hospitals and 7,718 general practitioner clinics providing private health care.

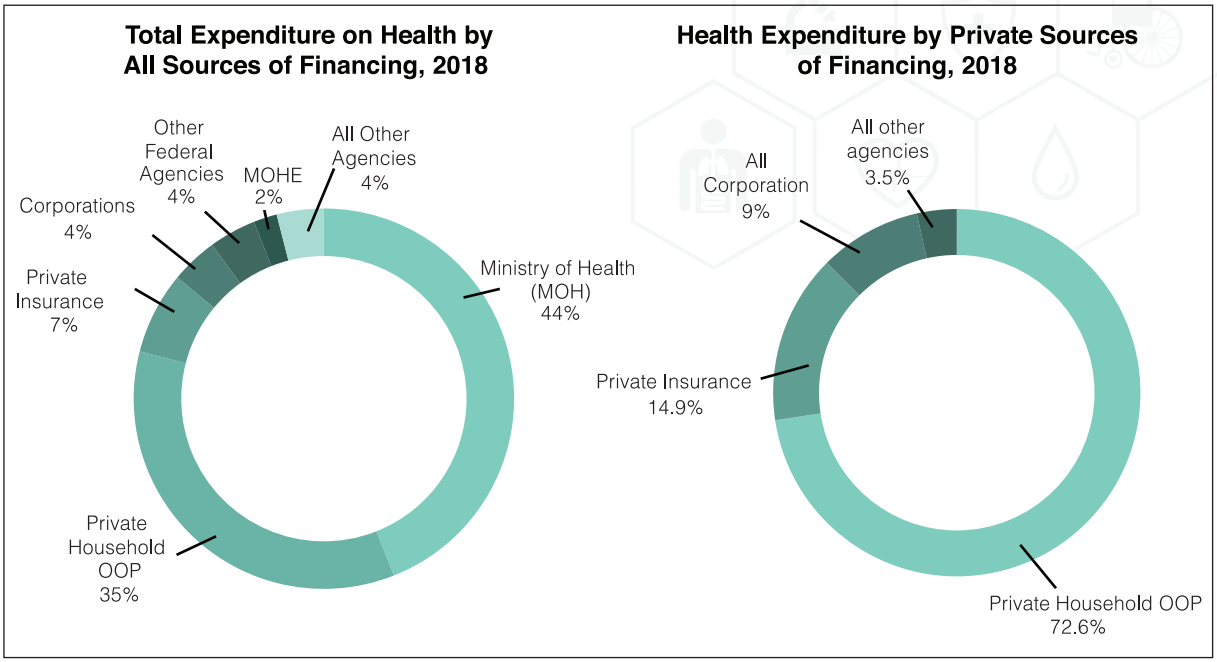
In 2018, the total expenditure on health was 4.2% of GDP and per capita expenditure on health increased 5% every year in Malaysia. The public health care expenditure was 51.9% of Total Health Expenditure (THE), while private health expenditure was 48.1%. In the same year, Malaysia's private household out-of-pocket (OOP) was 72.6% of private sector spending, which is twice the high-income country OOP. The other financing sources in the private sector were from 14.9% from private insurance and 12.5% from other contributions, as in Figure 2-3.

Figure 2-2: Public and Private Sector Resources and Workload 2015-2017, Malaysia



Source: Health Informatics Centre (HIC), Family Health Development Division, NHMS 2015, MNHA 2017
(Presented at the WHO meeting on 'Improving health workforce management for UHC', WPRO, Manila, June 2019)

Figure 2-3: Total Expenditure on Health and Health Expenditure by Private Sources of Financing, MNHA 2018



Source: Malaysia National Health Accounts, Health Expenditure Report 1997-2017

2.2. Demographic Trends

The estimated Malaysian population in 2018 was 32.4 million, which increased from 32.0 million in 2017, with an annual population growth rate of 1.1 per cent. The population of citizens in 2018 was 29.1 million. The male population in 2018 outnumbered females with 16.7 million (male) and 15.7 million (female). The sex ratio in 2018 was 107 males per 100 females.

As reported by the World Health Organization (WHO), the Malaysian population is also ageing. The percentage of population aged below 14 years (young age) in 2018 decreased from 24.1 per cent in 2017 to 23.8 per cent. Conversely, the population aged 15–64 years (working age) increased marginally from 69.6 percent in 2017 to 69.7 per cent in 2018, as did also the percentage of 65 years and over (old age) from 6.3 per cent to 6.5 per cent and estimated to reach 15% by the year 2030.

The escalation in the composition of both the working age and old age populations contributed to increased median age in 2018 to 28.6 years. The Bumiputra ethnic group increased by 0.3 percentage points in 2018 over 2017, and now accounts for 69.1 per cent of total citizens. The composition of both the Chinese and Indians ethnic groups dropped by 0.2 and 0.1 percentage respectively.

Malaysia's population **2018** is estimated at **32.4 million** with the annual population growth rate of **1.1%**

	Citizen	Non-citizen
2018[e]	29.06 million	3.32 million
2017	28.74 million	3.29 million

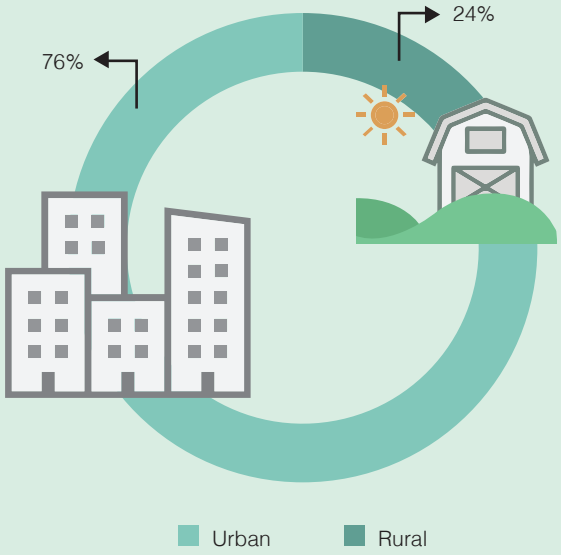
	Male	Female
2018[e]	16.72 million	15.66 million
2017	16.54 million	15.48 million

Population by Age Group

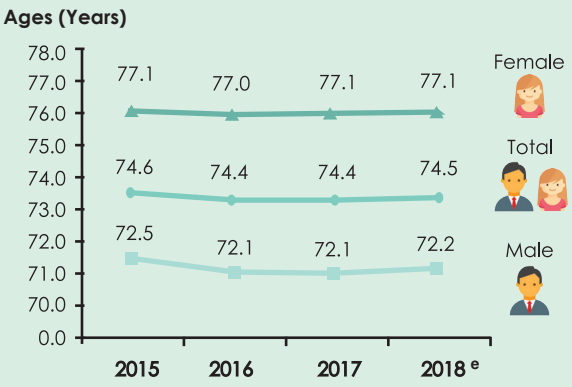
0 - 4 years	15 - 64 years	65+ years
2018[e]: 7.71 million (23.8%)	**2018[e]:** 22.58 million (69.7%)	**2018[e]:** 2.10 million (6.5%)
2017: 7.73 million (24.1%)	**2017:** 22.29 million (69.6%)	**2017:** 2.00 million (6.3%)

Total Expenditure in Health (% in GDP)

Distribution of Population in 2018



Life expectancy (2015 to 2018)



[e] Estimate

Source: Ahmad.R & Hasan.J, 2016; Department of Statistic Malaysia, 2017; Health Informatics MOH, 2019; Hirschmann.R, 2020

2.3. Health Trends in Malaysia

Malaysia is experiencing a disease burden with a rapid increase in communicable and non-communicable diseases. The National Health and Morbidity Surveys (NHMS) reported that diabetes mellitus among Malaysian adults aged 18 years and above increased from 11.2% in 2011 to 13.4% in 2015 and expected to increase further in coming years. The prevalence of hypercholesterolemia increased from 20.6% in 2006 to 47.7% in 2015, amounting to almost 50% of adults suffering from high cholesterol. A same increasing trend seen in obesity; 4.5% (1996), 14.0% (2006), 15.1% (2011) and 17.7% (2015). It is estimated that over half of those with diabetes, high blood pressure and hypercholesterolemia were undiagnosed.

On the other end, mental health is predicted to become another huge challenge among the Malaysian population. In NHMS 2015, 29.2% of Malaysians aged 16 years and above were having mental health problems, and 12.1% of younger children were affected. Meanwhile, communicable diseases such as dengue, tuberculosis, malaria, HIV /AIDS and food poisoning are on the rise. Lately, vaccine-preventable diseases, specifically measles, polio and diphtheria are re-emerging among children.

Over the years, cardiovascular and cerebrovascular diseases have been the leading cause of death in Malaysia. Many live with three (3) risk factor: diabetes mellitus, hypertension and hypercholesterolemia. Neoplasm/cancer is also among the top five (5) cause of death in both public and private hospitals. While injuries, including road traffic accidents reported being the top 10 causes of hospitalisation and mortality in Malaysia.

2.4. Issues and Challenges in Healthcare

Malaysia's health system has been effectively managing health challenges and producing commendable health outcomes. Both public and private health sectors have the latest equipment and emerging technological capabilities for providing excellent specialist services, but high numbers of patients in public hospitals and health clinics result in long waiting time and short consultation session. Despite the private health insurance is beyond the means of most people to seek treatment at private facilities.

The shift in the epidemiological picture towards non-communicable diseases, increasing longevity and re-emerging of communicable diseases has led to a growing emphasis on the need for a wider range of skills to be accessible through the health care system. There is now a pressing need to reorient health service delivery towards a model that emphasises health promotion, prevention of disease, and effective management of chronic illness. A recent focus on multi-skilled team approaches and cluster hospitals offer some potential to meet increasing demand and contain costs by an increased effort in providing comprehensive primary health care, community-based services, and new methods of user engagement. This approach needs an active role of AHP in the primary care-based multidisciplinary teams, and community-based treatment and rehabilitation service options.

Malaysia is continuously experiencing pressure to deliver the best health services to combat communicable and non-communicable diseases and, at the same time, manage increasing costs while also experiencing a workforce shortage. There is an urgent need to increase access to quality healthcare for everyone (equity) while optimising cost-effectiveness and cost-efficiency. One way to do this is to ensure that the extensive Human Resource for Health (HRH) already available in the system, including AHP, is strategically engaged with other health workers to provide a comprehensive health service.

Public sector community health services are commonly provided free of charge or with minimal cost but may have long waiting time. Access to services (as measured by waiting time) is one of the drivers of the private sector's emergence, as are government subsidies and rebates for private services provided to public patients. Staffing to reduce public waiting time to an acceptable level is a policy/funding decision. Demand for AHP will vary by geographical region due to demographic, socio-economic differences and urban/rural location.

Increased access to AHP can be anticipated to improve service productivity by better utilising

existing staff and increased involvement in preventative health. Should the Public/Private Partnerships (PPP) model develops further in Malaysia subsidised private sector providers can be anticipated.

Meanwhile, it is evident that the healthcare sector is growing most rapidly and facing rapidly changing technologies and medical knowledge. Demand for e-healthcare, delivery of virtual services, use of wearables amongst the public is growing. There is an urgent need, therefore, to train the healthcare providers with the latest knowledge to meet the demand and to be ready to embrace new trends in service provision.

2.5. Strategic Directions for the Health System

In order to strengthen the provision of Universal Health Coverage (UHC) and enhance the quality of healthcare services, the 11th Malaysian Health Plan (2016-2020) is focusing on:

i. Enhancing targeted support, particularly for underserved communities through mobile healthcare initiatives, mobile emergency services and ambulance services to enable faster services to all communities.

ii. Implementation of 'eHealth' strategy will incorporate existing Information and Communications Technology (ICT) systems into one system-wide model to enhance health data management and support research, development and commercialisation initiatives. The Government will work with the private sector to increase information sharing and strengthen the private sector's role in service delivery.

iii. Expanding capacity to increase accessibility, with initiatives in developing new facilities, upgrading existing facilities, and enhancing healthcare personnel capacity and capabilities. The Government will encourage private healthcare service providers and non-governmental organizations (NGOs) in the provision of healthcare facilities such as dialysis, rehabilitation and medical testing laboratories to complement the existing public healthcare services. The plan also intends to achieve 2.3 hospital beds per 1,000 populations, where the hospital bed count includes public and private hospitals, maternity and nursing homes, hospices and ambulatory care centres. There is also an aim to achieve a doctor to population ratio of 1:400.

iv. Intensifying collaboration with the private sector and NGOs to increase health awareness will span a broad range of initiatives, from community health and prevention programs, to research and development efforts between industries, universities, and research institutions.

v. Promoting the healthcare travel services industry where the focus will attract healthcare travellers seeking treatment in areas such as oncology, cardiology, orthopaedic, reproductive, and dental treatment services. The plan is to grow healthcare travel through international accreditation, increased insurance coverage, and the regional referral network, leveraging to attract a higher in-patient mix and revenue-per-patient in the identified areas.

There are four (4) main strategies and 18 strategic management steps to support and achieve the country's health transformation with special emphasis in the public sector. The AHP strategic implications are derived from the implementation of MOH strategic plans as in Table 2-1.

Table 2-1: MOH Strategies and Strategic Management for Health Transformation in 11th Malaysian Health Plan (2016-2020)

Strategies	Strategic Management
Strengthen delivery of healthcare services for each level of disease spectrum, emphasising on primary health care	- Expanding healthcare services to rural and remote areas - Implementing domiciliary healthcare in community setting - Establishing integrated primary healthcare teams - Implementing Lean Management for Healthcare - Implementing the Hospital Cluster Concept - Improving Pre-Hospital care and Ambulance Services - Building New and Upgrading Healthcare Facilities
Strengthening health system governance and organizational capacity	- Reviewing and formulating legislations and policies - Strengthening ICT Readiness and Integration through eHealth - Intensifying research and development and commercialisation - Enhancing safety for patients and healthcare personnel - Addressing healthcare personnel shortage and unequal distribution - Improving Human Resource Capacity Building Programmes
Empowering individual, family and community in health matters	- Enhancing Community Empowerment and Mobilisation Programme - Strengthening Health Promotion in Schools
Intensifying collaboration with public sector, private sector and NGOs	- Enhancing multisectoral efforts in healthcare delivery - Engaging the private sector - Strengthening the role of NGOs

Source: 11th Malaysian Health Plan (2016-2020)

2.6. Primary Health Care

Primary Health Care (PHC) is the first level of contact of individuals, families and communities for health services. PHC brings healthcare closer to where people live and work. It is estimated that about 90% of a person's health needs across their lifetime are covered at primary care. The PHC approach is the starting point to achieve the UHC and the health-related Sustainable Development Goals (SDGs) globally.

In Malaysia, a growing trend towards excessive spending on secondary and tertiary care services relative to primary has been noted (Harvard Group Report, Ministry of Health 2013). This trend is likely to contribute to higher costs and inferior health outcomes. It is evident that 49% of Malaysia's total health expenditure in Malaysia is directed to secondary and tertiary care compared to only 17% of primary care. In response, the health care strategies under the 11th Malaysia Plan, 2016-2020, intensified the focus on disease prevention and health promotion to provide health needs across the life span through comprehensive preventive, promotive, curative, rehabilitative services and palliative care.

To achieve these goals, it is necessary to strengthen the health system by investing in PHC. The implementation of equitable and effective PHC depends on adequate and competent human resources, good health facilities, a technology-driven approach and strong financing. The Healthcare workforce is a vital building block in the delivery of efficient primary care. Intense capacity building for all health workforce, including Allied Health practitioners, is paramount along with the enhancement of infrastructure, innovations in method of service provision and improvement of access at primary care.

2.6.1. The Malaysian Primary Health Care System and Access

To support the commitment of UHC and the direction of Malaysia's five (5) years plan and 10 years outline perspective plan, geographical access has been improved by building more health facilities, both static and mobile clinics. The PHC system in Malaysia is comprised of about 2,900 public health facilities and more than 7,000 private clinics.

The public sector has an extensive network of health clinics, community clinics in rural areas, and mobile clinics for remote areas in both east and west Malaysia to provide accessibility according to geographical variations and population need. In 2018, there were 3229 static clinics and 239 mobile health clinics/ teams in MOH. The static clinics comprised of 1001 Health Clinics (KK), 90 Maternal and Child Health Clinics (KKIA), 1791 Community Clinics (KD) and 347 1Malaysia Clinics (K1M); while the mobile clinics comprised 239 mobile teams (land – 175 teams, water – 32 teams and air – 12 teams) and 20 teams were operating 11 mobile clinics, seven (7) buses and four (4) boats.

The public facilities provide about 60% of outpatient care and account for about 35% of primary care expenditure. The private sector provides about 40% of outpatient care in urban and semi-urban areas and accounts for about 65% of primary care expenditure. The private sector is primarily financed through direct out-of-pocket payments from patients, with some contribution from private insurance or employer-based group insurance. Consultation and procedure fees are regulated by the Private Healthcare Facilities and Services Act. However, there is no control over the total expenditure per visit or admission to a private healthcare facility.

2.6.2. MOH: Public Primary Health Care and Services

The public PHC in Malaysia started with maternal and child (MCH) health services as one of the oldest health services rendered since the early 1900s. PHC services cover maternal and child health, nutrition, family planning, basic sanitation, control of endemic diseases, a supply of essential drugs, dental care, health promotion and health education.

Since the 7th Malaysia Plan (7MP), the strategic planning for primary care focuses on strengthening, widening and upscaling service from the 'womb to tomb'. The elderly care, mental health, adolescent, workers and rehabilitative activities, communicable diseases, and non-communicable diseases were integrated into the Family Health Programme. In 2006 the Reviewed Approach of Primary Health Care (REAP) was initiated, an integrated intervention and comprehensive life course approach, focusing on wellness and preventive services for risk factors and early disease detection while optimising the use of resources (Table 2-2).

2.6.3. Non-MOH: Public Primary Health Care and Services

In order to curb the spread of infectious diseases and reduce morbidity and mortality, primary health services also extended coverage in various institutions outside MOH, namely in prisons (42), depots (19), welfare institutions (33), learning institutions (17), drug rehabilitation centres (28), police training centres (8), youth and sports institutions (5) and occupational health departments (16). A total of 1,532 cadre posts deployed in these outside MOH health facilities comprising: Medical Officers, Assistant Medical Officers, Nurses, Pharmacy Assistant, Occupational Therapists, Physiotherapists, Dietitians and Health Attendants.

Table 2-2: The Evolution of Primary Health Care Services in MOH

Year 1960	Year 1980	Year 2000	Now
• Mother & Child • Family planning • Outpatient • Environmental • School • Health Education	• Mother & Child • Family planning • Outpatient • Nutrition • Environmental • School • Dental • Pharmacy • Laboratory • Health Education	• Mother & Child • Family planning • Outpatient • Environmental • School • Dental • Nutrition • Pharmacy • Laboratory Persons with Disabilities • Adult Health • Elderly • CVD • Mental Health • Adolescent • STI • TB/Leprosy • Occupational Health • Emergency • Health Informatics • Health Education & Health Promotion	• Mother & Child • Family planning • Outpatient • Environmental • School • Dental • Nutrition • Pharmacy • Laboratory • Child with Special Needs • Adult Health • Elderly • NCD • Mental Health • Adolescent • STI • TB/Leprosy • Occupational Health • Emergency • Health Informatics • Thalassemia • Rehabilitation • Dietetic • Immunization HPV • NSEP/MMT/HIV • Men's Health • Quit Smoking • Domiciliary • Dialysis • Health Education & Health Promotion

Source: Family Health Development Division, MOH 2018

2.6.4. Private Primary Health Care and Services

There are more than 8,000 Primary Care doctors in the private sector, also known as General Practitioners working in about 7,000 private Primary Care Clinics, majority of which are in the urban areas. These clinics are largely run single-handedly or by a few doctors, often without the complement of allied health care staff. They provide easy access for common acute minor ailments and simple trauma/injury management. The private Primary Care sector is currently regulated by the Private Healthcare Facilities and Services Act 1998, which covers registration and approval of the private Primary Care Clinics license. However, it does not incorporate monitoring of the performance and quality of care delivered by the private primary care doctors.

The Malaysian Quality and Costs of Primary Care (QUALICOPC) reported that the private Primary Care Clinics offered better access and shorter waiting time compared to public Primary Care Clinics. In terms of comprehensiveness, public Primary Care Clinics provided more comprehensive care by multidisciplinary allied health care team compared to the private clinics. However, gaps existed in longitudinal continuity and care coordination in both sectors as current legislation does not require patients to be registered with a family doctor. The ultimate aim of Primary Health Care transformation in Malaysia is to have an integrated public–private Primary Health Care system that is proactive, providing comprehensive, coordinated, continuous and high-quality care, designed to the population's long-term needs universal health coverage based on equity and solidarity.

2.7. Secondary and Tertiary Care

While primary care focuses on general treatment for overall patient education and wellbeing, secondary and tertiary treatment treat more serious conditions requiring advanced expertise and more intense monitoring of the health. Patients with severe medical conditions can be referred to a secondary care specialist following initial consultation with primary care providers for further examination or urgent treatment. Once the patient needs a higher level of speciality care within the hospital, the secondary care providers refer the patient for tertiary care where highly specialised equipment and expertise are available for in-patient investigation and treatment.

The secondary and tertiary hospital care involves services from pre-hospital care, emergency, ambulatory, diagnostic, medical, surgical based services, intensive care, rehabilitative and palliative care. Specialised Intensive Care Units, advanced diagnostic support services and specialized medical personnel are the key features of tertiary health care. There are more than 70 services listed in the Specialty and subspecialty Framework for Ministry of Health Hospital under 11th Malaysia Plan. The MOH Medical Programme reorients and focuses the delivery of health care away from hospital to the concept of near-home. This concept promotes accessibility, health promotion, disease prevention and effective long-term management of chronic diseases. The majority of AHP are working at secondary and tertiary care facilities in the country.

2.8. Public Health Services

In parallel with Primary Health Care, the Public health services are provided through a range of personal and population-based health programmes including health education and promotion, disease prevention, family health and nutrition. Public health services are designed to help individuals and communities achieve and maintain an optimal health status by delivering essential health care, informing, educating and empowering people about health issues, nutrition, behaviour and lifestyle changes through the incorporation of preventive, promotional, curative and rehabilitative care at all levels of the health care delivery system. The Environmental Health Officers, Food Technologist, Nutritionist, Health Education Officers and Entomologist are among the AHP directly involved in the provision of MOH public health services.

2.9. New Challenges and Roles of Allied Health Profession in Primary Care and Public Health

Newly emerging challenges are in non-communicable diseases (NCD), an ageing population and mental health, all of which need specialised health care delivered through a community care approach. The report on UHC and SDG Country Profile 2018, showed a need for aggressive effort to prevent and control non-communicable diseases in Malaysia. Malaysia Health Systems Research Report (2013) reported that most of the Malaysian adults have at least one risk factor for NCDs, and many have multiple risk factors including smoking, unhealthy diets and lack of physical activity. The National Health Morbidity Survey in 2015 reported the prevalence of mental health problems among Malaysian adults and children as 29.2% and 12.1% respectively.

Given these major health challenges and limited resources, there is a clear need to reorient health service delivery away from hospital-centric acute care to a model that emphasises on the education and promotion of healthy lifestyle, early detection, disease prevention, and effective management of chronic illness through comprehensive PHC and public health programmes. AHP need to collaborate with other professions and focus on early diagnosis and improve therapeutic services within communities in the area of diseases, mental illness, older people and disabled people needing rehabilitative care, palliative care, laboratory and radiology services.

This approach requires the active engagement of AHP in community-based care in multidisciplinary teams working to a population health and well-being model. Unfortunately, in Malaysia, this approach happens on a small scale, as very limited allied health practitioners like physiotherapists, occupational therapists, dietitians, nutritionist, medical social workers and optometrists are working in a multidisciplinary team to provide home visiting, wound care, and personalised and domiciliary care at

PHC. These services need enhancement as the transition from acute care to prevention in community and primary care is given emphasis.

However, an inadequate number of dietitians, nutritionists, health education officers, optometrist, occupational therapists, physiotherapists and other AHP in public Primary Care Clinics have not resolved. Their posts allocations have not been in parallel to the overwhelming demand for their role in prevention and chronic disease management. There is also a huge turnover of staff in public Primary Care Clinics as many trained and competent AHP in multidisciplinary chronic disease management team are being transferred elsewhere. Thus, patients with chronic multi-morbidities have been deprived of a better care, which could be delivered by the skillful multidisciplinary allied health team.

2.10. AHP Roles Redefined

In countries such as the United Kingdom and Australia, AHP roles are recognised in the wider development of community-based care alternatives to hospital admission. The potential for growth in AHP-led clinics in the public, local or private sectors occurs as new graduates find new opportunities. Self-referred patients will increasingly seek physiotherapists for muscular-skeletal pain, dietitians or nutritionists for diet management, and so forth. This is important to ensure that Family Medicine Specialists and their multidisciplinary allied healthcare team can focus on delivering comprehensive and high quality primary care services to the individual patients. These measures are vital to speed up recovery, shorten hospital stay, support post-discharge care and improve rehabilitation for disable person in the community. Accordingly, it is important to include AHP in strategic reform discussions in each region, as other professions are unlikely to see their full potential.

HRH ISSUES AND CHALLENGES: AHP

3. HRH Issues and Challenges: AHP

3.1. Issues and Challenges

In general, Malaysia is experiencing an increasing pressure to strengthen the delivery of health services and, at the same time, face increasing costs, workforce shortage, and need to upgrade facilities to meet rapidly changing health technology and evolving healthcare. On the other hand, the healthcare providers are blitzed with an increasing burden of non-communicable diseases, emergence and re-emergence of infectious diseases, ageing populations, and increasing mental health challenges. The client's expectation, quality, and safe practice issues need attention, and investing in research is a necessity now.

3.1.1. Enforcement for Allied Health Professions Act (Act 774)

There are 23 allied health professions from diverse backgrounds listed to be regulated by the Allied Health Professions Act (Act 774). This act is unique and different from other acts in Malaysia that regulate a single profession with similar qualifications. Under Act 774, each profession has a specific qualification, training pathways, expertise, function, the scope of services, and competencies. There are professions with dual qualification and two (2) levels of practitioner's i.e, those with a diploma qualification assisting officers with degree-causing overlapping of service scope. In MOH, every profession has designated job scope, while multitasking is expected in the private sector. Thus, there is a need to establish a suitable regulatory framework to implement Act 774 in the local context.

3.1.2. AHP Competency and Standard of Evaluation

Allied health encompasses a diverse range of professions with different technical skills, knowledge, and practices. Like any other profession, AHP is also challenged with increasing service demands, need for enhanced and new competencies for effective health provision, and rapidly advancing technologies. Being the third pillar of the health care workforce, professions of allied health require a robust credentialing, competency, and capability development structure/framework. The framework should be planned in this strategic plan 2021-2025 to link with relevant learning, teaching, continuing professional development, and support opportunities for career development and succession planning.

3.1.3. Inadequate, Unbalanced Deployment and Over Supply of AHP

Most AHPs are employed at secondary or tertiary care facilities, and extremely limited numbers are working in primary care settings. The disparities in regional distribution are evident and more vacancies are seen in East Malaysia. In addition to the maldistribution of healthcare professionals, the deployment does not correlate by workload or service need in some facilities. The workload in some facilities is high, and the human resource is a deficit. Meanwhile, the number of healthcare facilities increases, the expansion of healthcare service and changing disease burden continue to happen. This situation is worsening by implementing the Lean Civil Service Policy since the year 2015 and the initiative to optimise the human resources in the public sector. There is no new employment for AHP graduates from the Ministry of Health Training Institutions for the last few years. On the other hand, there is over-supply of medical, dental, pharmacy graduates, nurses, and AHP in the country is due to a recent proliferation of colleges and medical schools.

3.1.4. Slow Career Pathway

Currently, time-based promotions are limited to doctors, dentists, and pharmacists only. The promotion opportunities for AHP are limited, depending on the availability of posts and vary between professions. That led to the migration of some highly skilled allied health professionals like Speech-Language Therapist and Clinical Psychologist to the private sector due to high demand and better remuneration benefits. This career pathway shall be further deliberated and emphasised in the strategic plan to ensure the AHP grows together with other healthcare providers in the coming years.

3.1.5. No Career Development Pathway for AHP Specialist/ Expert

Inadequate career development opportunities, especially for subspecialties for AHP, are reported in HRH country profile 2015. There is

no remuneration benefit, or other incentives for allied health professionals with postgraduate qualifications (post-basic, advanced diploma, masters, and Ph.D.). Upon completion of the studies, they are not positioned at facilities that require the expertise. A postgraduate qualification among AHP seldom translate into promotional opportunities or progress in the career pathway than other healthcare providers. Even though HRH policies, strategies, and plans are developed as part of a five-year national plan, issues and challenges are constantly raised related to AHPs career development in the Public Sector. A shared understanding of the breadth, the reach, and possibilities of allied health career pathways will create an enabling environment leveraging allied health professionals' full potential.

3.1.6. Limited Training Opportunity

HRH country profile 2015 reported insufficient allocation of training funds for AHP in MOH and limited budget; the quota is shared by 30 AHP involving more than 31,000 staff. More budget and training opportunities are needed in speciality and subspeciality areas for AHP parallel to medical development. There is a need to evaluate the type of competencies and training need in preparation for future health care transformation. Competencies in digital health and technology-driven health services, emerging and yet-to-be-imagined areas need emphasis and priorities.

3.1.7. Rapidly Growing Technology and Changing Health Knowledge and Environment

Now, face to face therapy and interventions are facing off, and technology-driven treatments are emerging rapidly. Virtual health services, teleconsultation, use of smart applications, and wearables are becoming the preferred mode of service delivery. Due to convenient, less costly, and time-saving, the public prefers services which can be delivered to their home. Thus, of allied health professions should prepare for the changing health knowledge, embrace the technology-driven services, build talent with digital skills, and harness the opportunities instantly to become a technologically talented workforce, while continuing to be relevant in healthcare.

3.1.8. Health Facilities and Equipment

As the year goes by, more medical and non-medical equipment become old and some technologies turn obsolete and outdated. The building and facilities are becoming worn off and increasing safety concerns for the health care providers. Old facilities and equipment are directly jeopardising safety, quality and effectiveness of health service. On the other hand, expansion of services and an increase in patients' numbers are inevitable. Appropriate investment to refurbish, optimisation of resource management, detailed planning and collaborations of all departments /divisions is essential in next strategic plan.

3.1.9. Research, Evidence-Based and Value-Based Practice

Health research is an investment and all health care providers, including AHP, have the responsibility to plan research priority areas to confront the demanding future. Research is an opportunity to draw on allied health professionals' capabilities to innovate and contribute to generating solutions for the emerging and complex challenges facing the sector. In the past, AHP seemed to have limited involvement and visibility in health-related research. Every AHP should give attention to plan for involvement in high impact research or collaboration with other professions, universities or public-private partnerships to produce significant healthcare improvement, augment provision of evidence-based and value-based practices.

3.1.10. Workforce Norm and Projection for AHP

Only 17 professions have calculated norm for workforce need in MOH, which was developed by benchmarking other developed countries. Since AHP works in various settings from the community, primary care, hospital, laboratories and rehabilitation, it is not easy to use simple population ratio to estimate workforce need and to translate into an effective action plan. At present, human resources for health projection is not established based on the Malaysian health system, disease burden, workload and service need. This is worsened with limited supply and demand information for AHP in the country.

3.1.11. Country Profile for AHP

Currently, the only basic profile is available for the AHP in MOH based on a simple database and updated by profession periodically. Some additional information is available from the Malaysian Optical Council, Malaysian Food Analyst Council, Board of Counsellors, Atomic Energy Licensing Board. The country profile for both public and private AHP is not available and expected to have some allied health practitioner's information once Act 774 come to affect.

3.1.12. Visibility and the Lack of a Professional "Voice"

AHP 's key concern is the lack of visibility in the Malaysian health system and the absence of a professional 'voice.' In order to provide efficient and quality care to meet population needs, effective leadership and visibility are key attributes for the allied health workforce. Under representation of allied health in management roles and committees are known factors contributing to lack of opportunistic communication and less effective resource utilisation for the allied health workforce in rural and remote areas. Therefore, for greater visibility, allied health leaders and practitioners need to work in a cohesive healthcare team to become the executive voice for AHP in healthcare.

3.2. Strategic Directions for HRH in MOH

Internerlising the issues and challenges in healthcare, the HRH Profile 2015 states that the future development of human resources for health requires:

a. Suitable organisational arrangements that define and specify responsibility for comprehensive planning that integrates the HRH needs of all sectors in the country for the provision of health services.

b. Adequate and timely HRH information that includes integrated data from all sectors supplemented, where relevant, with survey information,

c. Adequate capacity to analyse the HR data to provide input for immediate and medium-term planning for HRH production, deployment and utilisation, and

d. Sufficient linkages between data analysts and policy makers to enable evidence-based policy making for HRH for the provision of health services.

Various initiatives are planned under the Malaysian Health Plan for HRH, including:

a. Healthcare Personnel Shortage and Unequal Distribution Human Resource for Health (HRH) Masterplan 2016-2020,

b. Development of specialised personnel among nurses, assistant medical officers (AMO) and other allied health professionals,

c. Acceleration of implementation of Allied Health Professions Act, 2016 - ACT 774 by the year 2019,

d. Establishment and recognition of career pathways for Subject Matter Experts (SME),

e. Enhance leadership potential among technical healthcare professionals in MOH through a Talent Grooming Programme.

f. Provide short- and long-term training opportunities to enhance the quality and capacity of the current health workforce.

A multi-skilled/multi-tasking team approaches offer some potential to meet increasing demand and contain costs by realigning the AHP roles in provision of healthcare.

3.3. Strategic Directions for AHP Internationally

In many countries, new medical professions are emerging, driven by specialisation, new technologies, emerging multidisciplinary models of health care and by government subsidies, grants or policy initiatives. The AHP are dynamic in response to needs, social influence and funding streams. Historically, the lack of information derived from research into AHP practice has impeded the development of AHP policy on their roles and functions within health systems. Research is needed to assess better cost-effectiveness and clinical efficacy of alternative modes of delivery, multidisciplinary and collaborative care models, and to guide the reform of service structures.

As the AHP scope of services has increased, boundary issues of professional clinical practice have arisen. For example, in the field of cardiothoracic surgery teams now include perfusionists, physician assistants, physiotherapist, intensivists, rehabilitation therapists, dietitians and social workers.

Internationally, these cross-professions role negotiations have developed into effective multidisciplinary clinical teams providing high quality continuing care and improved outcomes.

Reviews of AHP services across the UK and other European countries related to good practise and recommendations for improving the health and well-being of individuals and communities found AHP services to be effective in:

- Alleviating pressures in General Practitioners practices (for example self-referral to physiotherapy),
- Preventing unnecessary hospital admissions (for example a coordinated 'falls' service),
- Initiating early interventions in community settings (for example prevention of malnutrition and provision of speech and language therapy in schools), and
- Rehabilitating elderly patients to allow safer and quicker discharges.

In Australia, AHPs work effectively in the area of prevention, early intervention, community-based treatment and rehabilitation, highly specialised surgical and medical diagnosis, treatment and monitoring service, hospital and community based mental health services, comprehensive aged care programs and aged residential services. For example, Monash Health (Non-Hospital Care) offers AHP led Community Health, Community Rehabilitation – Centre Based, Community Rehabilitation – Home Based, Residential Aged Care Services, Specialty Clinics and Palliative care.

In Singapore, the Allied Health Services Council (AHSC) developed intensive approaches in optimising AHPs and allied health support staff to better address the growing needs of the population. The initiatives include:

- Establishing an Extended Diagnostic and Treatment Unit (EDTU) (for example, expedited podiatry care services at the emergency department by both podiatrists and physicians promptly, reduce unnecessary admission to wards),
- Expansion of core professional with experienced AHPs (for example, a care protocol for patient's journey is projected by a multidisciplinary team involving Orthopaedics Surgery, Physiotherapy, and Occupational Therapy in triaging and escalating the treatment),
- Transdisciplinary Allied Health Skills and Knowledge framework (for example, a Physiotherapist or Occupational Therapist who has undergone transdisciplinary training will be deployed to provide allied health care services to suitable patients at home).

In order to progress the objective of developing AHP in Malaysia it will be necessary to clarify their respective functions in different settings (therapeutic, diagnostic, scientific/technical, public health and as adjuncts to other professions) to create structures that facilitate their further integration into the health system and to identify those functions that are best delivered as a single profession and those amenable to multi-disciplinary care and the potential for economic efficiencies.

The International Standard Classification of Occupations (ISCO, 2008 revision) could be used to achieve common definitions as a base for comparison among countries. The ISCO tool is the basis for many national occupational classifications, although it limits categories and does not conform to all national classifications.

The HRH Country Profile (2013) states that 'most allied health professions in the Ministry of Health are hospital-based'. The major challenge ahead is the redeployment of Malaysia's AHPs as essential members in team-based approaches to deal with leading national health challenges, such as NCDs, mental health, and rehabilitation in community settings.

This will require system changes that would empower AHP to gain competence and acceptance in settings that would increase their effectiveness in disease prevention and health promotion. It has already been recognised that the production of some allied health professionals in Malaysia, such as speech-language therapists, audiologists, and clinical psychologists is small compared to current and projected increasing demand.

THE ALLIED HEALTH SCIENCES DIVISION, MEDICAL PROGRAMME, MINISTRY OF HEALTH, MALAYSIA

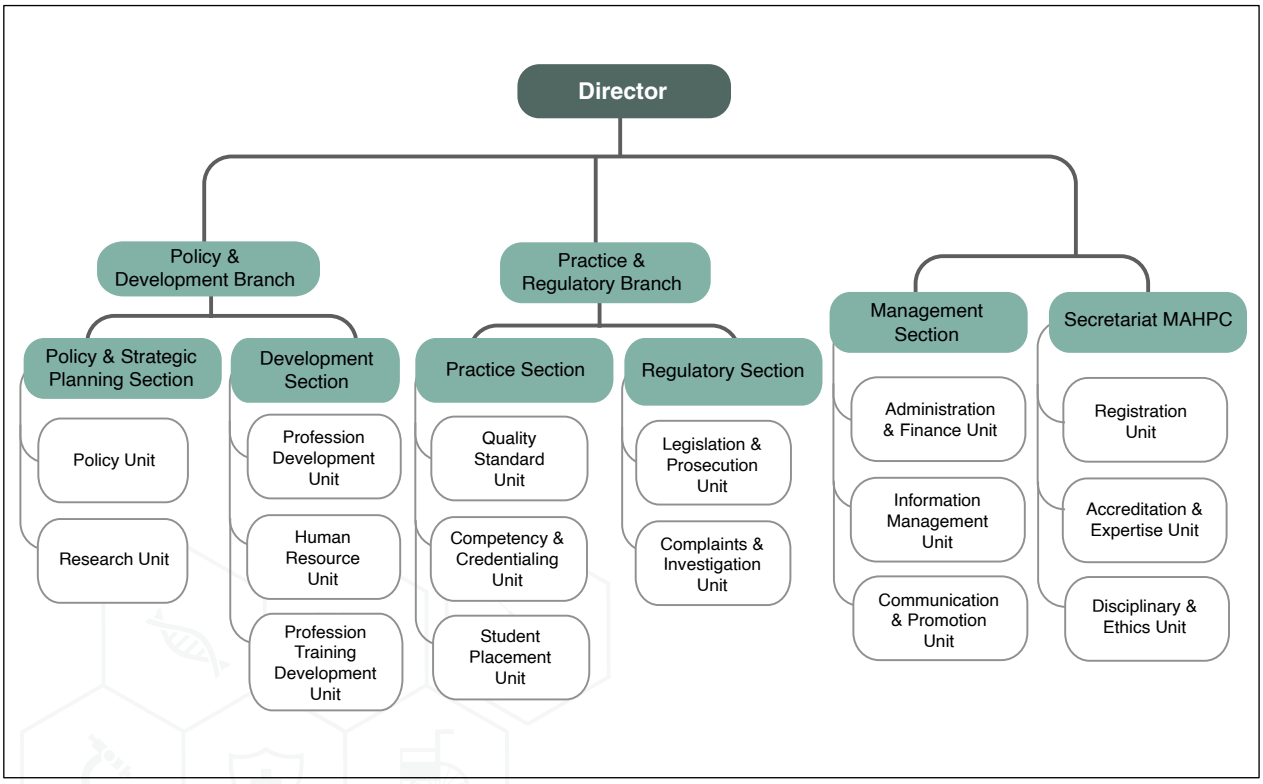
4. The Allied Health Sciences Division

The Allied Health Sciences Division (AHSD), Medical Programme, Ministry of Health Malaysia (MOH) was established on 1st June 2006 under the Medical Program, in recognition of the need to manage and support the unique requirements of the Allied Health Professions (AHP) in the public health sector. AHSD is responsible for the development of AHP to strengthen competency and capability to meet the service demand and to ensure the right person is doing the right job at the right place. AHSD ensures that the AHP deliver safe, effective, efficient and high-quality care with optimum usage of resources and technology. In general, AHSD works to provide national leadership that shapes and supports the contribution made by AHP to national health and wellbeing.

AHSD works to improve service delivery, enhance competency and capability of AHP in the country through initiatives and development of standards, guidelines, credentialing process, student training guides, training need analysis, competency evaluation programs, career development pathways, human resources planning and recognition of Subject Matter Experts (SME) among AHP in MOH.

Following the gazette of the Allied Health Professions Act 2016 (Act 774), in 2017 AHSD was restructured to accommodate new organisational functions. In the new structure, the core team involved in the Act 774 was upgraded to a Secretariat to plan and execute activities related to the act until the Malaysian Allied Health Professions Council (MAHPC) is appointed. Parallel to that, a new section was established comprised of Regulatory/Legislation & Prosecution and Complaints & Investigation Units (Figure 4-1).

Figure 4-1: Organisation Chart, Allied Health Sciences Division, Ministry of Health Malaysia



Source: Allied Health Sciences Division, MOH 2017

4.1. Classification of Allied Health Professions

There are 30 categories of AHP in MOH divided into Clinical, Laboratory and Public Health groups. In MOH, the AHP have exclusive name/title compared to the international Standard of Classification of Health (ISCO-08) and the related act (Table 4-1). The ISCO-08 classification/ other standards are used for the profession name/title in this report. Currently, 28 professions are directly governed by AHSD (Table 4-2). The Dental Therapist and Pharmacy Assistant are administered by the respective divisions from January 2019.

However, only 23 professions are regulated under the Allied Health Professions Act 774. Other professionals such as Optometrist, Food Technologist, Counsellor, and Dental Therapist and related works are regulated by other acts. Each AHP in MOH is led by a Head of Profession appointed by the Director General of Health Malaysia. They are responsible to support initiatives for professional development, training, and enhancement of specialised competencies, improvement of service standards, provision of expert advice and to facilitate research and development activities of each profession.

Table 4-1: The ISCO-08, AHP Profession Name/Title in Related Acts and in MOH

International Standard Classification of Occupation – ISCO-08/ other standards	Profession Name/Title in Related Acts in Malaysia	Profession Name/Title in MOH (in Bahasa Malaysia and English Translation)
Audiologist	Audiologist	*Pegawai Pemulihan Perubatan (Pendengaran)* Medical Rehabilitation Officer (Audiology)
Biochemist	Clinical Scientist (Biochemist)	*Pegawai Sains (Kimia Hayat)* Science Officer (Biochemistry)
Biomedical Scientist	Clinical Scientist (Biomedical)	*Pegawai Sains (Biomedikal)* Science Officer (Biomedical)
Clinical Psychologist	Clinical Psychologist	*Pegawai Psikologi (Klinikal)* Psychology Officer (Clinical)
Counsellor	Counsellor*	*Pegawai Psikologi (Kaunseling)* Psychology Officer (Counselling)
Dental Technologist	Dental Technologist	*Juruteknologi Pergigian* Dental Technologist
Dental Therapist	Dental Therapist*	*Juruterapi Pergigian* Dental Therapist
Diagnostic Radiographer	Diagnostic Radiographer	*Pegawai Pengimejan (Diagnostik)* Diagnostic Imaging Officer
		Juru X-ray (Diagnostik) Diagnostic Radiographer
Dietitian	Dietitian	*Pegawai Dietetik* Dietitian
Embryologist	Clinical Scientist (Embryologist)	*Pegawai Sains (Embriologi)* Science Officer (Embryology)
Entomologist	Entomologist (Public Health)	*Pegawai Sains (Entomologi)* Science Officer (Entomology)
Environmental Health Officer	Environmental Health Officer	*Pegawai Kesihatan Persekitaran* Environmental Health Officer
		Penolong Pegawai Kesihatan Persekitaran Assistant Environmental Health Officer

Food Service Officer	Food Service Officer (Healthcare)	*Pegawai Penyediaan Makanan* Food Service Officer
		Penolong Pegawai Penyediaan Makanan Food Service Assistant
Food Technologist	Food Technologist*	*Pegawai Teknologi Makanan* Food Technologist Officer
		Penolong Pegawai Teknologi Makanan Food Technology Assistant
Forensic Scientist	Forensic Science Officer	*Pegawai Sains (Forensik)* Science Officer (Forensic)
Health Education Officer	Health Education Officer	*Pegawai Pendidikan Kesihatan* Health Education Officer
Medical Geneticist	Clinical Scientist (Medical Geneticist)	*Pegawai Sains (Genetic)* Science Officer (Genetic)
Medical Laboratory Technologist	Medical Laboratory Technologist	*Juruteknologi Makmal Perubatan* Medical Laboratory Technologist
Medical Physicist	Medical Physicist	*Pegawai Sains (Fizik)* Science Officer (Physic)
Medical Record Officer	Medical Record Officer*	*Pegawai Rekod Perubatan* Medical Record Officer
		Penolong Pegawai Rekod Perubatan Assistant Medical Record Officer
Medical Social Worker	Medical Social Officer	*Pegawai Kerja Sosial Perubatan* Medical Social Worker
Microbiologist	Clinical Scientist (Microbiologist)	*Pegawai Sains (Mikrobiologi)* Science Officer (Microbiology)
Nutritionist	Nutritionist	*Pegawai Sains (Pemakanan)* Nutritionist
Occupational Therapist	Occupational Therapist	*Pegawai Pemulihan Perubatan (Carakerja)* Medical Rehabilitation Officer (Occupational Therapy)
		Jurupulih Perubatan (Carakerja) Medical Rehabilitation Assistant (Occupational Therapy)
Optometrist	Optometrist*	*Pegawai Optometri* Optometrist
Pharmacy Assistant	Pharmacy Assistant*	*Penolong Pegawai Farmasi* Pharmacy Assistant
Physiotherapist	Physiotherapist	*Pegawai Pemulihan Perubatan (Fisioterapi)* Medical Rehabilitation Officer (Physiotherapy)
		Jurupulih Perubatan (Fisioterapi) Medical Rehabilitation Assistant (Physiotherapy)
Radiation Therapist	Radiation Therapist	*Pegawai Pengimejan (Terapi)* Radiation Therapy Officer
		Juru X-ray (Terapi) Radiation Therapist
Speech-Language Therapist	Speech-Language Therapist	*Pegawai Pemulihan Perubatan (Pertuturan)* Medical Rehabilitation Officer (Speech)

Source: Allied Health Sciences Division, MOH
Note: The ISCO-08 is used for the profession name/title in this report
** These professions are not in Second Schedule in Act 774, refer to the related acts in Table 9-1*

Table 4-2: Allied Health Professionals, MOH

Clinical Group	Laboratory Group	Public Health Group
Audiologist*	Biochemist*	Entomologist*
Clinical Psychologist*	Biomedical Scientist*	Environmental Health Officer*
Diagnostic Radiographer*	Dental Technologist*	Health Education Officer*
Dietitian*	Embryologist*	Nutritionist*
Food Service Officer*	Forensic Scientist*	Food Technologist
Medical Physicist*	Medical Geneticist*	
Medical Social Worker*	Medical Laboratory Technologist*	
Occupational Therapist*	Microbiologist*	
Physiotherapist*		
Radiation Therapist*		
Speech-Language Therapist*		
Pharmacy Assistant		
Counsellor		
Dental Therapist		
Medical Record Officer		
Optometrist		
Tutor		

Source: Allied Health Sciences Division, MOH

*Note: * Listed in Second Schedule Act 774*

4.2. Functions of AHSD

AHSD is responsible for coordinating the AHP service delivery and professions development of the entire allied health sector in the MOH. Soon will start regulating the allied health practitioners in the private sector once the Allied Health Professions Act 2016 comes into force.

The key functions of AHSD are:

i. Develop policies and strategic planning to improve AHP service delivery and professions development.
ii. Determine standards, core competencies, and norms for service provision and ensure safety and quality of service.
iii. Plan and identify human resource needs and new work areas that utilises the full scope of AHP expertise.
iv. Coordinate, monitor and evaluate the implementation and outcome of healthcare services by AHP.
v. Collaborate and provide consultancy to agencies/ departments within and outside MOH.
vi. Plan and coordinate research at all levels and areas of the allied health services to ensure allied health professionals provide evidence-based, high-quality and value-added care.

4.3. Strategic Priorities of the AHSD

Implementation of Allied Health Professions Act 2016 (Act 774), which governs 23 AHP with divergent service scopes and qualifications, is a major emphasis. The Strategic Planning 2018-2020 has included the implementation of the Allied Health Professions Act (Act 774) as AHSD's core strategy to support the effort to start practitioner registration in the year 2019. Meanwhile, AHSD is also dedicated to developing competent AHP in specialised allied health fields. The AHP expertise recognition method is being established to meet the expert registration requirements in Act 774. Training need analysis and new training plan for the relevant expert/specialty fields and sub-fields are designed to meet the required competency levels. To ensure AHP practitioners in both public and private sectors have a high level of competency, AHSD will work collaboratively with academics, associations and AHP professional bodies to plan training and service delivery in Malaysia.

The AHSD is committed to ensuring nationwide implementation of health agenda towards achieving WHO Universal Health Coverage (UHC), Sustainable Development Goals (SDG) and enhancing the well-being of the Malaysian.

MALAYSIA AHP WORKFORCE 2019:MOH

5. Malaysia AHP Workforce 2019: MOH

Table 5-1 shows the numbers of allied health workforce (post filled) of 30 categories of AHP in the MOH as at 31st December 2018, grouped by the nature of their work into three (3) categories – clinical, laboratory, and public health. The Clinical group consists of 52.4% of the total allied health workforce in MOH, 26.8% from the Laboratory group and the Public health group represents 20.8% of the total 31,143 AHP workforce in MOH.

More than half of clinical group represented by Pharmacy Assistant (25.5%), Dental Therapist (17.5%) and Diagnostic Radiographer (15.8%), while the Medical Laboratory Technologists represent 77.2%, Dental Technologist (11.1%) and Biochemist (5.4%) of the total workforce in the laboratory group. The public health group consist of 77.3% of Environmental Health Officers, followed by Food Technologist (10.6%) and Nutritionist (6.5%).

The three (3) categories (Clinical, Laboratory and Public Health) is a broad grouping that may not adequately reflect the location of work within the health system. It could not be assumed that most (if not all) clinical AHP work in hospital settings, but many roles listed as clinical may also be carried out in the primary and public health care settings.

Table 5-1: Distribution of Allied Health Human Resource by Category, MOH

Clinical Group	No.	Laboratory Group	No.	Public Group	No.
Audiologist	190	Biochemist	448	Entomologist	126
Clinical Psychologist	32	Biomedical Scientist	82	Environmental Health Officer	5017
Counsellor	143	Dental Technologist	928	Health Education Officer	239
Diagnostic Radiographer	2569	Embryologist	10	Nutritionist	422
Dietitian	446	Forensic Scientist	40	Food Technologist*	686
Food Service Officer	352	Medical Geneticist	19		
Medical Physicist	214	Medical Laboratory Technologist	6444		
Medical Social Worker	258	Microbiologist	378		
Medical Record Officer	440				
Occupational Therapist	1340				
Optometrist	291				
Physiotherapist	1558				
Radiation Therapist	285				
Speech-Language Therapist	131				
Tutors*	1060				
Dental Therapist*	2842				
Pharmacy Assistant *	4153				

Source: *1. Database Profession AHSD MOH,*
*2. *Maklumat Kedudukan Perjawatan (Human Resource Post Information) MOH (2018)*

Note: *The numbers in the table indicates the total post filled by allied health professionals by 31st December 2018 Data provided by Diagnostic Radiographer, Environmental Health Officer, Food Service Officer, Medical Record Officer, Occupational Therapist, Physiotherapist and Radiation Therapist include both officer and assistant.*

5.1. The Role and Functions of the Allied Health Professionals

The allied health workforce is represented by a diverse range of professions. Each profession has specific qualifications, expertise, training pathways, nature of job and service delivery requirements. A detailed rapid review of the AHP, including distribution, qualifications, the scope of services, functions and competencies, training and career paths, is presented in the Rapid Review Report on Allied Health Profession – Towards New Frontiers in Allied Health Services in Malaysia.

AHP are autonomous practitioners who work collaboratively as part of effective teams alongside doctors, nurses, pharmacists and other professionals to provide holistic, person-centred care. AHP are qualified to support and enable diagnosis of health conditions, provide interventions to maintain and optimise the physical, social and mental wellbeing of the community. They also play an important role in the prevention, management and treatment of chronic disease and have specialised knowledge, skills and enabling approaches that help people with chronic conditions to live well and reduce the impact and long-term consequences of these conditions. Practical interventions from AHP are often significant in enabling people to recover movement and mobility, overcome visual problems, improve nutritional status, develop communication and everyday living skills, thus allowing them to sustain and enjoy quality of life even when faced with life limiting conditions. Table 5-2 describes the general role and function of allied health professionals in healthcare.

Table 5-2: Allied Health Professionals' Roles/Functions

No.	Professionals	Roles/Functions
1.	Audiologist	Audiologist is involved in the identification, diagnosis and management of impairments and dysfunction of the peripheral or central auditory function, tinnitus, vestibular and balance and other related systems. They are also facilitate prevention through the fitting of hearing devices, re(habilitation), education programmes for industry and the public, hearing screening, hearing conservation programmes and research.
2.	Biochemist	Biochemist is involved in providing comprehensive biochemical services for the medical, public health programmes, research & technical support that comply with established international standards to ensure the delivery of a timely and quality service. Responsible for the planning and management of up-to date biochemical testing and technical interpretation in various pathology discipline, blood transfusion, radiochemistry and public health services through continuous consultancy, training and research in this field.
3.	Biomedical Scientist	Biomedical Scientist practices in various diagnostic investigation, teaching, research and development as well as management in areas of clinical laboratory; histopathology, cytology, haematology, blood transfusion, microbiology, biochemistry and molecular testing.

No.	Professionals	Roles/Functions
4.	Clinical Psychologist	Clinical Psychologist addresses continuing and comprehensive mental and behavioural health care that encompass minor adjustment issues to severe psychopathology. Involves in the provision of diagnosis, assessment, treatment, prevention, amelioration and rehabilitation of psychological distress, disability, dysfunctional behaviour, and health risk behaviour as well as the enhancement of psychological wellbeing.
5.	Counsellor	Counsellor is responsible for promoting healthy behaviour, managing mental health issues, enhancing psychological wellbeing and improving quality of life for patients through individual, group counselling services, family counselling, marriage counselling, consultancy services and crisis interventions.
6.	Dental Technologist	Dental Technologist is involved in the preparation of dental restorative devices, implants, maxilla-facial prostheses for the rehabilitation of oral function and dental appliances including bridges, crowns, dentures, dental braces and orthodontic appliances to improve oral function, phonetic and aesthetic aspects of oral health in the community.
7.	Diagnostic Radiographer	Diagnostic Radiographer provides a range of diagnostic imaging procedures using ionising and non-ionising radiation to create an image to confirm or exclude a clinical diagnosis, to assist, monitor and manage treatment processes or for screening programs or research.
8.	Dietitian	Dietitian is professionally trained to prescribe medical nutrition therapy for the purpose of disease management. He/she conducts the nutrition care process to assess and diagnose nutrition problems, set priorities, establishes goals, prescribes and implements dietary plan, monitors and evaluate outcomes in disease management. He/she plans menus for therapeutic diets to meet nutritional requirements of individuals and groups.
9.	Embryologist	Embryologist works in the field of assisted reproduction technology and related disciplines to perform all laboratory aspects of human assisted reproduction technology according standard and best practices conforming to highest ethical standards.
10.	Entomologist	Entomologist conducts technical field inspections and laboratory studies related to identification, classification and control of insects that may have an adverse effect on the environment and public health.

No.	Professionals	Roles/Functions
11.	Environmental Health Officer	Environmental Health Officer is responsible for control of the environmental health risks, promotion and protection of public health and the environment in the areas of disease control, hygiene and food safety, housing and environmental health, vector control, drinking water quality, water sanitation, emergency preparedness and enforcement of public health legislation in line with the roles and functions as determined by the Expert Committee, the World Health Organization No.79 or its amendments.
12.	Food Service Officer	Food Service Officer is responsible for overall quality management of the healthcare foodservice including planning, operations, coordination as well as monitoring food safety and quality improvement in line with the relevant Act and regulations.
13.	Food Technologist	Food Technologist is responsible in conducting food safety and quality control activity, domestic and import food compliance, food export control, food analysis as well as risk assessment in order to protect the public against health hazards and fraud in the storage, preparation, processing, packaging, transportation, sale and consumption of food.
14.	Forensic Scientist	Forensic Scientist involves in retrieval, storage and analysis of samples / specimens received from the medico legal medical examination to investigate the cause of death which covers toxicology, histopathology, entomology, anthropology and biology. Provides technical expertise while ensuring quality performance and safety in the field.
15.	Health Education Officer	Health Education Officer is responsible for cognitive knowledge, attitude change (affective) and skill (psychomotor) in shifting the behavioural health of the community towards a healthier lifestyle. They are also responsible to empower people with healthy lifestyle skills, increase advocacy with the stakeholders to create a healthy environment, strengthen the smart partnership and networking of various sectors to enhance the health of the people.
16.	Medical Geneticist	Medical Geneticist performs cytogenetics, molecular genetics and biochemical genetics applications for diagnosing diseases, treatment and surveillance, provides expert advice in the related application protocol, uses scientific skills in experimental designs, problem solving and in-service development through research and investigations.

No.	Professionals	Roles/Functions
17.	Medical Laboratory Technologist	Medical Laboratory Technologist performs routine medical/scientific laboratory testing using microscopic examination/ analysis, immunologic, microbiologic, hematologic, cytogenetic, molecular and chemical testing on blood, bodily fluids and tissue specimens as well as generate relevant results.
18.	Medical Physicist	Medical Physicist provides clinical medical physics services in imaging and/or therapeutic radiation in radiotherapy (clinical oncology), diagnostic and interventional radiology and in nuclear medicine.
19.	Medical Record Officer	Medical Record Officer is responsible in developing medical records policy and health information for diagnosis and procedure codes, diagnosis related group classification of case mix, manage medical records, medical report, medical board; and medico-legal case. Also involved in International Statistical Classification of Disease (ICD) diagnoses and procedure coding management and health statistics information management.
20.	Medical Social Worker	Medical Social Worker is responsible to provide psychosocial assistance to patients and/ or family members through biopsychosocial assessment, supportive therapy and practical assistance interventions focusing on casework, group work and community work. The supportive therapy interventions involve consultation, emotional support and crisis interventions while practical assistance interventions involve aspects of financial assistance for acute and chronic patients, institutional placement and tracking down patient's relatives. Medical Social Worker works in collaborative networking with various medical profession disciplines, government and non-government agencies, and local communities.
21.	Microbiologist	Microbiologist involved in conducting analysis, provides technical interpretation, validation and conduct research in the area of microbiology (bacteriology, mycology, virology, serology, immunology, parasitology, mycobacteriology, environmental microbiology, transfusion microbiology). Manages and supervise the technical aspects of microbiology, develop, validate and implement methodologies, ensure quality performance and safety while providing technical expertise in the field.
22.	Nutritionist	Nutritionist is an individual who is trained and registered as a Nutritionist to advocate and promote nutritional well-being of the individual and population as well as to prevent and control nutrition-related diseases of various target groups at different settings and levels through policies and regulations, education, training, assessment and monitoring of nutritional status, carrying out nutritional interventions, consultancy, research and development.

No.	Professionals	Roles/Functions
23.	Occupational Therapist	Occupational Therapist promotes health and wellbeing to enable people to participate in daily occupations (activities and valued life roles at work and home) leisure and socially, to facilitate successful adaptation due to disruption in lifestyle, prevent losses of function and improve or maintain psychological status.
24.	Optometrist	Optometrist examines, diagnoses and treats visual function anomalies using glasses, contact lenses, prisms, visual therapies, low vision devices and early intervention. Optometrist also detects, manages ocular conditions including referrals, detects and provides consultation for colour vision deficiencies, and participates in out-reach services to prevent blindness and visual impairment.
25.	Physiotherapist	Physiotherapist involved in promotion of physical activity and overall health and wellness, prevention of disease/ injury/ disability and mobility limitations, managing acute, subacute and chronic conditions with functional/ activity limitations and restoration of function and rehabilitation of disease/ injury/ disability with therapeutic exercise programs and other interventions.
26.	Radiation Therapist	Radiation Therapist performs medical radiation procedures and applies ionizing radiation to the human body, for radiotherapy imaging and therapeutic purposes as approved by the appropriate authority.
27.	Speech-Language Therapist	Speech-Language Therapist assess, diagnosis, and treat communication disorders, cognition, voice disorders, and swallowing disorders for persons with speech, language, voice, sound, fluency, communication and swallowing disorders or differences by considering the impact of culture and linguistic exposure/acquisition and best evidence.
28.	Tutor	Tutor is responsible to train and educate students in the fields of allied health for Ministry of Health Malaysia.

Source: Allied Health Sciences Division, MOH
Note: The table indicates the general description of the role/function of a profession and not exhaustive to the examples given.

5.2. Allied Health Workforce Deployed in the Ministry of Health Malaysia

Like other healthcare workers, AHP are also recruited by the Public Service Commission and governed by the Public Service Department's regulations. Information related to deployment, promotions, wages and transfers are managed by Human Resources Division, MOH. However, there is no comprehensive workforce information for AHP practicing in the private sector compared to doctors, dentists, pharmacists and nurses whose workforce database is available in registration for practice. Therefore, only allied health workforce profile in MOH is illustrated in this report.

Maklumat Kedudukan Perjawatan (Human Resource Post Information), MOH 2018 reported a total of 33,209 post for AHP in MOH and 2,079 (6.25%) posts from various professionals were not filled until 31 December 2018 across the country. The three (3) professions with the highest percentage of vacancies were Speech-Language Therapy, 47 (26.3%), followed by Tutors 330 (23.7%) and Environmental Health 49 (19.5%) Table 5-3.

Table 5-3: Number of Allied Health Professionals Posts and Status as of 31st December 2018, MOH

No.	Professional	Total	Filled	Vacant	Percentage of Vacancy (%)
1.	Audiologist	201	190	11	5.0
2.	Biochemist	471	443	28	5.9
3.	Biomedical Scientist	85	82	3	3.5
4.	Clinical/ Counselling Psychologist	223	184	39	17.5
5.	Diagnostic Radiographer/ Radiation Therapist (Officer)*	192	160	32	16.7
6.	Diagnostic Radiographer	2663	2490	173	6.5
7.	Dietitian	457	409	48	10.5
8.	Dental Technologist	1004	924	80	8.0
9.	Dental Therapist	2952	2863	89	3.0
10.	Embryologist	12	11	1	8.3
11.	Entomologist	137	118	19	13.9
12.	Environmental Health (Officer)*	251	202	49	19.5
13.	Assistant Environmental Health Officer	5030	4859	171	3.4
14.	Food Service (Officer)*	33	30	3	9.1
15.	Food Service Assistant	336	323	13	3.9
16.	Food Technologist (Officer)*	544	513	31	5.7
17.	Food Technology Assistant	208	187	21	10.1
18.	Forensic Scientist	44	40	4	9.1
19.	Health Education Officer	249	222	27	10.8
20.	Medical Geneticist	22	19	3	13.6
21.	Medical Laboratory Technologist	6734	6406	328	4.9
22.	Medical Physicist	253	213	40	15.8
23.	Medical Record (Officer)*	53	50	3	5.7
24.	Assistant Medical Record Officer	455	409	46	10.1
25.	Medical Social Worker	286	252	34	11.9
26.	Microbiologist	410	375	35	8.5
27.	Nutritionist	443	419	24	5.4
28.	Occupational Therapist (Officer)*	155	147	8	5.2
29.	Occupational Therapist	1231	1158	73	5.9
30.	Optometrist	319	295	24	7.5
31.	Pharmacy Assistant	4300	4157	143	3.3
32.	Physiotherapist (Officer)*	175	156	19	10.9
33.	Physiotherapist	1422	1375	47	3.3
34.	Radiation Therapist	290	257	33	11.4
35.	Speech-Language Therapist	179	132	47	26.3
36.	Tutor	1390	1060	330	23.7
	Total	**33,209**	**31,130**	**2,079**	**6.26**

Source: Maklumat Kedudukan Perjawatan (Human Resource Post Information), MOH 2018.
*Note: * Officer indicates those practitioners with degree in the professions with dual entry level qualification (degree and diploma). This data includes those on study leave, open post and group post*

Since 2014, the National Credentialing Committee (NCC) has credentialed a total of 6,519 allied health practitioners from nine (9) professions (audiology, diagnostic radiography, dietetics, dental technology, physiotherapy, occupational therapy, optometry, radiation therapy and speech language therapy) in various procedures in MOH. This credentialing is a process to enhance allied health competency and strengthen service provision by allied health practitioners in advanced core, specialised and optional procedures in related fields.

Another milestone was achieved in 2019 when 20 allied health professionals were appointed as Subject Matter Expert (SME) in various specialty fields and deployed in key areas at hospitals, laboratories and institutions in MOH. This is recognition of Allied Health Professionals as an expert based on their qualification, experience and contribution within and outside agencies in various field or speciality as in Table 5-4.

Even though HRH policies, strategies and plans are developed as part of a five-year national plan, there are issues and challenges constantly raised related to AHP development and career pathway in the Public Sector.

Table 5-4: Allied Health Professionals and SME Area/Field and Speciality, MOH

Professional	SME Area/Field	SME Speciality
Audiologist	Rehabilitation Audiology	• Tinnitus • Vestibular & Balance
Biochemist	Transfusion	• Immunohematology
Diagnostic Radiographer	Diagnostic Radiography	• CT Scan • Breast Imaging • Cardiovascular Imaging
Dietitian	Dietetics	• Oncology
Medical Geneticist	Genetics	• Cytogenetics • (chromosome study) • Molecular Cytogenetics • Molecular Genetics
Medical Physicist	Physics	• Radiotherapy • Radiology • Nuclear Medicine
Microbiologist	Microbiology	• Mycobacteriology • Parasitology (Malaria) • Virology (Dengue)
Nutritionist	Nutrition	• Public Health Nutrition • Nutrition Epidemiology • Maternal, Infant and Young Child
Optometrist	Binocular vision	• Orthoptic
Radiation Therapist	Radiation Therapy	• Radiotherapy
Speech-Language Therapist	Language & Rehabilitation therapy	• Rehabilitation • Geriatric

Source: Allied Health Sciences Division, MOH

DISTRIBUTION OF THE AHP WORKFORCE : MOH

6. Distribution of the AHP Workforce: MOH

Most of the information on the distribution of the AHP Workforce in MOH in this chapter excludes information on Pharmacy Assistant, Dental Therapist, Food Technologist and Tutor except Table 6-7 and Table 6-8. Those pursuing post-graduate studies as of 31 December 2018 are omitted and there are some incomplete data for some profession in this report. Data and information sources are mainly from Database Profession AHSD MOH and *Maklumat Kedudukan Perjawatan* (Human Resource Post Information) MOH (2014-2018).

Table 6-1 shows the distribution of allied health workforce by gender and age group in MOH. Apart from the Environmental Health Officers and Dental Technologists and the Diagnostic Radiographers (where the differences are small) the number of females exceeds males in all other professions and age groups. The age distribution shows that 80% of the AHP enumerated are 40 years of age or younger (51% aged 31-40 and 29% aged 30 or younger). Meanwhile, those aged 41-60 comprised 20% of the AHP workforce in MOH.

Table 6-2 shows the regional distribution of the allied health workforce in Malaysia. Assessment of the degree of comparative equity in the geographical distribution of staff requires calculating the number of allied health professionals per head of population, disease trend, demographic changes, type and number of healthcare facilities and equipment and technology available in the region or state in Malaysia.

Table 6-3 shows the distribution of the AHP workforce by ethnicity (Malay, Chinese, Indian, Others). In 2017 the Malaysian population comprised of 61.7% Malays, Chinese 20.8%, Indian 6.2% and others including non-citizens 11.3%. Of the AHP enumerated the Malay comprise 74%, Chinese 4.9%, Indian 3.8% and others 17% of total allied health workforce in MOH.

Table 6-4 shows the summary of the gender distribution among the allied health workforce. Of the total workforce, 59.3% are females, and 40.7% are males in MOH.

Table 6-1: Distribution of AHP by Gender and Age Group

Category of AHP	Professional	Gender	Age Group (Year)			
			<30	31-40	41-50	51-60
Clinical Group	Audiologist	Male	14	12	4	-
		Female	39	109	12	-
	Clinical Psychologist	Male	1	1	-	-
		Female	9	19	2	-
	Counsellor	Male	1	21	13	3
		Female	11	72	20	2
	Diagnostic Radiographer	Male	310	609	168	49
		Female	295	883	208	47
	Dietitian	Male	19	29	8	1
		Female	77	267	35	10
	Food Service Officer	Male	15	67	17	5
		Female	8	194	21	25
	Medical Physicist	Male	10	44	13	5
		Female	38	96	7	1
	Medical Social Worker	Male	2	31	23	17
		Female	14	104	58	9

Category of AHP	Professional	Gender	Age Group (Year)			
			<30	31-40	41-50	51-60
Clinical Group	Medical Record Officer	Male	10	45	30	30
		Female	15	206	59	45
	Occupational Therapist	Male	185	121	25	13
		Female	443	452	70	31
	Optometrist	Male	9	25	3	3
		Female	22	193	29	7
	Physiotherapist	Male	221	186	35	19
		Female	465	496	100	36
	Radiation Therapist	Male	39	49	11	3
		Female	92	75	15	1
	Speech-Language Therapist	Male	4	3	1	1
		Female	63	51	8	-
Laboratory Group	Biochemist	Male	6	47	18	15
		Female	46	241	63	12
	Biomedical Scientist	Male	1	10	1	-
		Female	4	61	5	-
	Dental Technologist*	Male	65	169	159	58
		Female	68	181	175	46
	Embryologist	Male	-	3	1	-
		Female	1	5	-	-
	Forensic Scientist	Male	-	17	-	-
		Female	3	20	-	-
	Medical Geneticist	Male	1	1	-	-
		Female	4	11	2	-
	Medical Laboratory Technologist*	Male	596	768	262	255
		Female	1350	2325	612	227
	Microbiologist	Male	11	59	21	12
		Female	18	204	42	11
Public Health Group	Entomologist	Male	2	22	7	5
		Female	17	56	15	2
	Environmental Health Officer	Male	1102	1560	709	376
		Female	467	758	45	0
	Health Education Officer	Male	14	36	36	17
		Female	12	70	45	9
	Nutritionist	Male	7	42	14	4
		Female	40	270	40	5
	Total	**Male**	**2645**	**3977**	**1579**	**891**
		Female	**3621**	**7419**	**1688**	**526**

Source: Database Profession AHSD MOH
*Notes: *Professionals with incomplete information*
(Dental Technologist = 7 out of 928, Medical Laboratory Technologist = 49 out of 6444)
Data provided by Diagnostic Radiographer, Environmental Health Officer, Food Service Officer, Medical Record Officer, Occupational Therapist, Physiotherapist and Radiation Therapist include both officer and assistant.

Table 6-2: Regional Distribution of AHP in Malaysia

	Professionals	Peninsular West Coast	Peninsular East Coast	Sabah	Sarawak
Clinical Group	Audiologist	137	30	14	9
	Clinical Psychologist	25	3	1	3
	Counsellor	98	17	14	14
	Diagnostic Radiographer	1615	426	271	257
	Dietitian	312	65	39	30
	Food Service Officer	227	59	38	28
	Medical Physicist	172	15	15	12
	Medical Social Worker	171	39	25	23
	Medical Record Officer	279	70	48	43
	Occupational Therapist	847	198	173	122
	Optometrist	198	49	23	21
	Physiotherapist	931	270	190	167
	Radiation Therapist	181	0	44	60
	Speech-Language Therapist	100	13	8	10
Laboratory Group	Biochemist	307	64	42	35
	Biomedical Scientist	66	8	6	2
	Dental Technologist	503	211	105	109
	Embryologist	6	2	2	0
	Forensic Scientist	27	6	4	3
	Medical Geneticist	19	0	0	0
	Medical Laboratory Technologist*	3783	1052	752	830
	Microbiologist	273	51	32	22
Public Health Group	Entomologist	74	26	14	12
	Environmental Health Officer	2528	979	764	746
	Health Education Officer	168	29	24	18
	Nutritionist	257	84	43	38

Source: Database Profession AHSD MOH
*Notes: *Incomplete information for 27 out of 6444*
Data provided by Diagnostic Radiographer, Environmental Health Officer, Food Service Officer, Medical Record Officer, Occupational Therapist, Physiotherapist and Radiation Therapist include both officer and assistant.

Table 6-3: Distribution of AHP Workforce by Ethnicity

	Professionals	Ethnicity				Total Staff
		Malay	Chinese	Indian	Others	
Clinical Group	Audiologist	179	5	1	5	190
	Clinical Psychologist	17	13	0	2	32
	Counsellor	112	9	6	16	143
	Diagnostic Radiographer	1964	88	123	394	2569
	Dietitian	334	84	13	15	446
	Food Service Officer	315	2	4	31	352
	Medical Physicist	188	11	1	14	214
	Medical Social Worker	223	4	4	27	258
	Medical Record Officer	403	7	3	27	440
	Occupational Therapist	932	74	49	285	1340
	Optometrist	273	8	1	9	291
	Physiotherapist	1028	123	112	295	1558
	Radiation Therapist	208	11	6	60	285
	Speech-Language Therapist	95	29	3	4	131
Laboratory Group	Biochemist	336	56	29	27	448
	Biomedical Scientist	61	9	3	9	82
	Dental Technologist	714	35	19	160	928
	Embryologist	8	0	0	2	10
	Forensic Scientist	29	4	1	6	40
	Medical Geneticist	17	1	1	0	19
	Medical Laboratory Technologist*	4415	286	244	1439	6384
	Microbiologist	300	26	31	21	378
Public Health Group	Entomologist	110	3	5	8	126
	Environmental Health Officer	3483	193	123	1218	5017
	Health Education Officer	202	7	9	21	239
	Nutritionist	331	49	8	34	422

Source: Database Profession AHSD MOH
*Note: *Incomplete information for 60 out of 6444*
Data provided by Diagnostic Radiographer, Environmental Health Officer, Food Service Officer, Medical Record Officer, Occupational Therapist, Physiotherapist and Radiation Therapist include both officer and assistant.

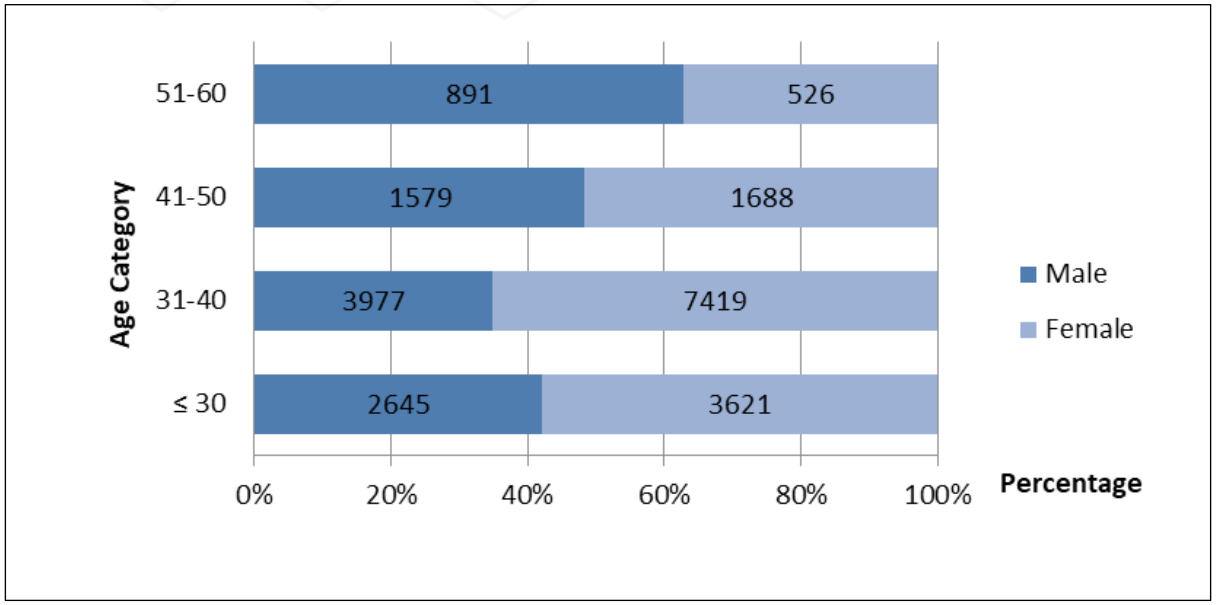
Table 6-4: Distribution of AHP Workforce by Gender

Professionals		Gender		Total Staff
		Male	Female	
Clinical Group	Audiologist	30	160	190
	Clinical Psychologist	2	30	32
	Counsellor	38	105	143
	Diagnostic Radiographer	1136	1433	2569
	Dietitian	57	389	446
	Food Service Officer	104	248	352
	Medical Physicist	72	142	214
	Medical Social Worker	73	185	258
	Medical Record Officer	115	325	440
	Occupational Therapist	344	996	1340
	Optometrist	40	251	291
	Physiotherapist	461	1097	1558
	Radiation Therapist	102	183	285
	Speech-Language Therapist	9	122	131
Laboratory Group	Biochemist	86	362	448
	Biomedical Scientist	12	70	82
	Dental Technologist	454	474	928
	Embryologist	4	6	10
	Forensic Scientist	17	23	40
	Medical Geneticist	2	17	19
	Medical Laboratory Technologist*	1889	4528	6417
	Microbiologist	103	275	378
Public Health Group	Entomologist	36	90	126
	Environmental Health Officer	3747	1270	5017
	Health Education Officer	103	136	239
	Nutritionist	67	355	422

Source: Database Profession AHSD MOH
*Note: *Incomplete information for 27 out of 6444*
Data provided by Diagnostic Radiographer, Environmental Health Officer, Food Service Officer, Medical Record Officer, Occupational Therapist, Physiotherapist and Radiation Therapist include both officer and assistant.

Figure 6-1 shows the allied health workforce's distribution by gender and age category, illustrating that the older age groups (age >51 years old) are around 60% male, and the younger age groups are predominantly female. This may indicate either a change occurring in the workforce gender distribution, or representing graduates from allied health related training, or it may merely be an artefact of age and a difference in male and female rates of remaining in the workforce over more extended periods.

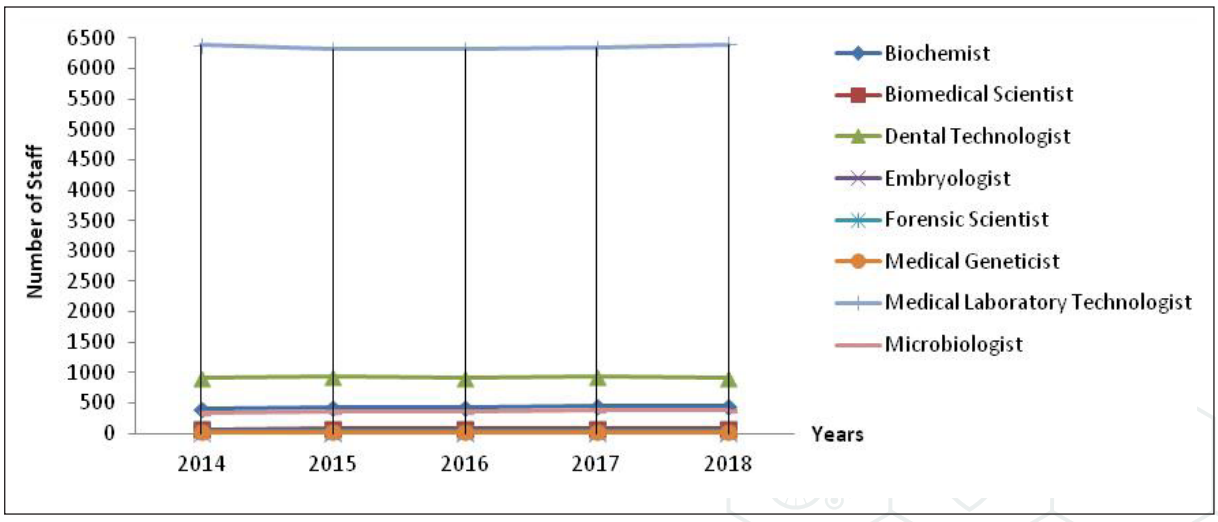
Figure 6-1: Distribution of MOH AHP Workforce by Gender and Age



Source: Database Profession AHSD MOH

Figure 6-2 shows the trending of the allied health workforce (Laboratory Group) for five (5) years (2014 – 2018) for selected professions. Those illustrated show a relatively flat line indicating no significant increases over the years.

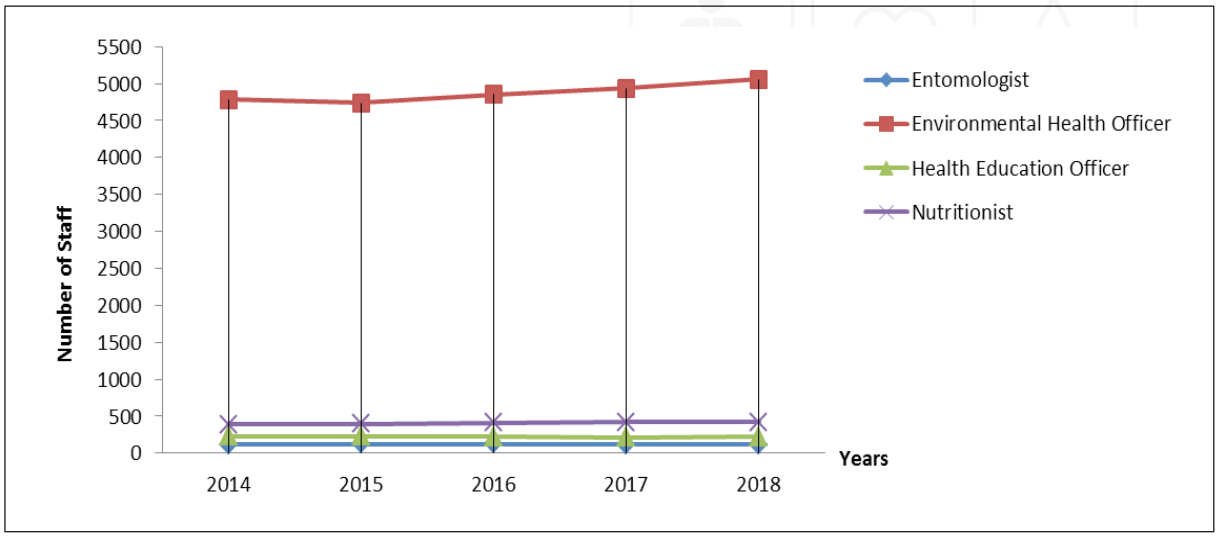
Figure 6-2: Trending of AHP Workforce (Laboratory Group) in year 2014 – 2018



Source: Maklumat Kedudukan Perjawatan (Human Resource Post Information) MOH (2014-2018)

Figure 6-3 shows the trending of the allied health workforce (Public Health Group) for five (5) years (2014 – 2018) again, illustrating a flat line for all listed professions other than for Environmental Health Officers, which shows a sustained increase since 2015.

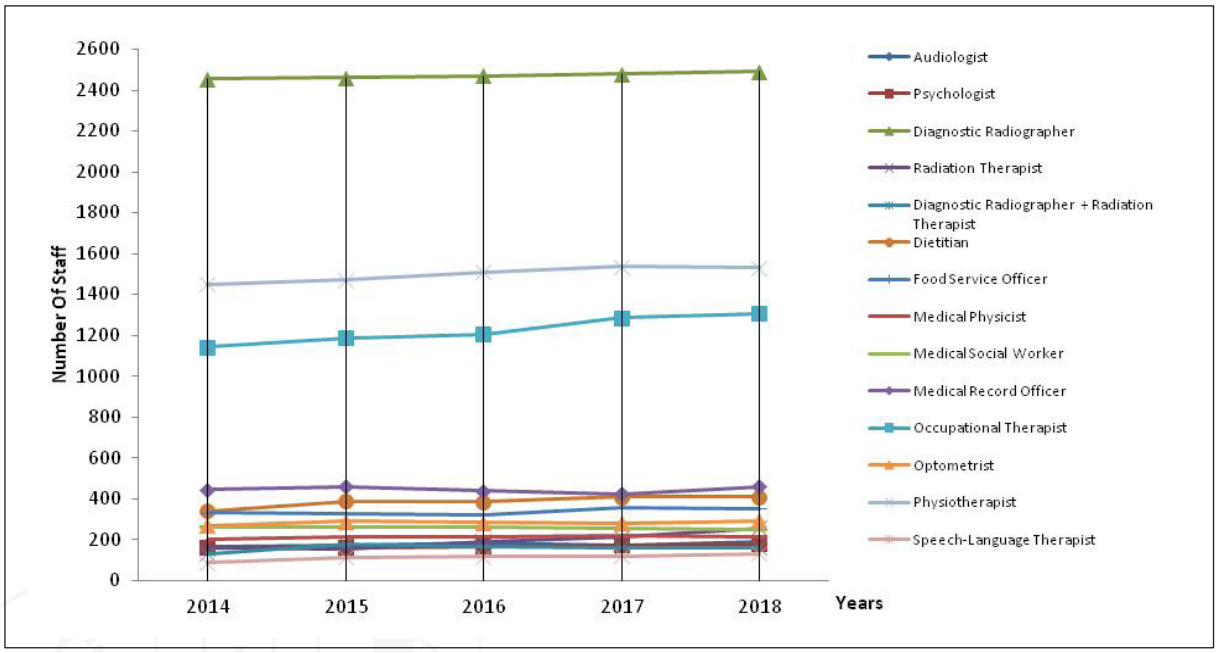
Figure 6-3: Trending of AHP Workforce (Public Health Group) in year 2014 – 2018



Source: Maklumat Kedudukan Perjawatan (Human Resource Post Information) MOH (2014-2018)

Figure 6-4 shows the trending of the allied health workforce (Clinical Group) for five (5) years (2014 – 2018) again illustrating a relative flat line for most professions other than Occupational Therapists and Food Service Officers and a slight increase in Diagnostic Radiographers.

Figure 6-4: Trending of AHP Workforce (Clinical Group) in year 2014 – 2018



Source: Maklumat Kedudukan Perjawatan (Human Resource Post Information) MOH (2014-2018)

The number of healthcare professionals in health clinics is experiencing a slight increment over the years (2015-2018). However, these numbers are still inadequate to address the population health needs in primary care in Malaysia (Table 6-5).

Table 6-5: Trend of HRH Deployed at Primary Care (2015-2018)

No	Professional Category	2015	2016	2017	2018
1	Family Medicine Specialist	281	329	395	439
2	Medical and Health Officer	3643	4929	4689	5877
3	Pharmacist	1846	2149	2142	2142
4	Assistant Medical Officer	4294	4374	5045	5270
5	Nurse	10,943	11,122	11,752	11,752
6	Pharmacy Assistant	1950	2016	1991	1991
7	Medical Lab Technologist	1856	1896	1883	1916
8	Radiographer	410	399	402	410
9	Community Health Nurse	13837	13,853	13,331	13,331
10	Medical Social Worker*	20	20	22	22
11	Occupational Therapist*	215	215	242	258
12	Dietitian*	60	59	63	66
13	Physiotherapist*	308	332	334	337
14	Optometrist*	1	1	2	2
15	Nutritionist	334	334	329	329

Source: Family Health Development Division, MOH 2018; Nutrition Division, MOH 2018
*Note: *Additional category monitored under the Primary Care since 2015*
Data provided by Radiographer, Occupational Therapist and Physiotherapist include both officer and assistant.

Table 6-6 shows the allied health workforce's distribution by service level categories of federal (including national hospitals, training, and other institutions); and state (including district offices, hospitals, and health clinics).

AHP in the Clinical group is predominantly located in national hospitals or institutions, state hospitals and, health clinics (Type 1-3 and Type 4-7).

AHP in the Laboratory group is predominantly working in national and state hospitals with and in smaller numbers in non-specialised hospitals.

AHP in the Public Health group is predominantly working in district health offices, state health offices, and state hospitals.

Across the three (3) categories of AHP in MOH, the Diagnostic Radiographers, Dietitians, Occupational Therapists, Physiotherapists, Dental Technologists, Medical Laboratory Technicians, and Nutritionists are working in state level health clinics.

Table 6-7 shows the Regional (Peninsular, Sabah, and Sarawak) distribution of Allied Health Professionals per 100,000 populations for 2014-2018 based on the workforce in MOH. This table provides a baseline for assessing the distribution of AHP by highlighting variability across the Regions with the potential to identify areas where populations are relatively underserved. The majority of the allied health workforce is employed in the Peninsular (West Malaysia) compared to Sabah & Sarawak (East Malaysia). The differences between Sabah and Sarawak in most the categories of AHP are marginal, and Medical Geneticist and Tutors are centralised in Peninsular Malaysia.

The allied health professionals per 100,000 Population is more significant if derived based on total AHP reflecting distribution in Malaysia's public and private sectors. Future policies on supply, demand, and re-distribution of the workforce could be formulated based on current situational analysis, disease trend, population demographic, service need and gap, skill need, type of facilities, and availability of certain technology or equipment.

Table 6-6: Distribution of AHP Workforce by Level

Level	Clinical Group														Laboratory Group								Public Health Group			
	Audiologist	Clinical Psychologist	Counsellor	Diagnostic Radiographer	Dietitian	Food Service Officer	Medical Physicist	Medical Social Worker	Medical Record Officer	Occupational Therapist	Optometrist	Physiotherapist	Radiation Therapist	Speech-Language Therapist	Biochemist	Biomedical Scientist	Dental Technologist	Embryologist	Forensic Scientist	Medical Geneticist	Medical Laboratory Technologist	Microbiologist	Entomologist	Environmental Health Officer	Health Education Officer	Nutritionist
Federal Level																										
Administrative Units																										
Medical Program	0	0	1	1	3	0	1	8	5	3	8	3	1	0	3	0	0	0	1	0	0	3	1	0	1	1
Public Health Program	0	0	3	2	4	0	1	0	1	2	0	2	0	0	2	0	0	0	0	0	4	0	5	72	40	54
Others*	0	0	3	6	5	0	39	3	17	0	0	0	1	0	4	0	0	0	0	0	0	7	3	0	2	4
Academic and Research Units																										
National Institute of Health	0	0	0	0	5	0	0	0	0	0	0	0	0	0	15	5	0	0	0	1	234	8	3	3	24	9
MOH Colleges	0	0	5	0	0	0	0	0	0	0	0	9	0	0	-	0	8	0	0	0	0	0	0	16	0	0
National Public Health Laboratories	0	0	0	0	0	0	0	0	1	0	0	0	0	0	7	0	0	0	0	0	59	24	2	0	0	0
Health Facilities																										
National Hospitals	13	5	9	139	32	19	28	24	31	53	22	99	67	11	47	9	8	4	5	17	213	22	0	8	4	0
Institutions	7	10	12	78	27	29	34	17	19	121	2	81	106	9	17	1	0	2	0	0	123	6	0	1	5	3
National Blood Bank	0	0	0	0	0	0	0	0	1	0	0	0	0	0	25	0	0	0	0	0	125	24	0	0	2	0
State Level																										
Administrative Units																										
State Health Office	0	0	32	0	0	0	46	0	40	0	0	0	0	0	6	0	11	0	0	0	75	1	52	446	57	48
District Health Office	0	0	7	0	0	0	0	2	2	0	0	73	0	0	0	0	0	0	0	0	595	0	60	4359	48	26

Level	Clinical Group														Laboratory Group								Public Health Group			
	Audiologist	Clinical Psychologist	Counsellor	Diagnostic Radiographer	Dietitian	Food Service Officer	Medical Physicist	Medical Social Worker	Medical Record Officer	Occupational Therapist	Optometrist	Physiotherapist	Radiation Therapist	Speech-Language Therapist	Biochemist	Biomedical Scientist	Dental Technologist	Embryologist	Forensic Scientist	Medical Geneticist	Medical Laboratory Technologist	Microbiologist	Entomologist	Environmental Health Officer	Health Education Officer	Nutritionist
Health Facilities																										
State hospitals	81	11	23	768	105	78	40	70	108	298	104	350	52	56	115	46	33	4	28	0	1253	112	0	33	22	0
Hospital with specialists (Major ≥400 bed)	68	2	25	501	100	62	21	53	60	205	86	245	48	36	81	16	22	0	6	1	819	76	0	35	20	1
Hospital with specialists (Major <400 bed)	16	2	11	226	38	33	3	21	41	104	23	103	10	10	26	1	8	0	0	0	350	26	0	7	8	0
Hospital with specialists (Minor)	4	2	11	229	32	47	1	24	44	118	30	139	0	7	36	2	11	0	0	0	453	30	0	9	6	0
Hospital without specialist	0	0	1	240	23	84	0	17	70	147	14	153	0	0	57	1	4	0	0	0	614	8	0	5	0	0
State Public Health Laboratories	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	100	29	0	0	0	0
Health Clinic (Type 1-3)	0	0	0	291	56	0	0	18	0	207	1	194	0	2	0	0	822	0	0	0	798	0	0	0	0	141
Health Clinic (Type 4-7)	0	0	0	88	8	0	0	1	0	43	0	66	0	0	0	0	1	0	0	0	566	0	0	0	0	111
Maternal and Child Health Clinic	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	63	0	0	0	0	24
Cadre	1	0	0	0	8	0	0	0	0	37	1	39	0	0	0	1	0	0	0	0	0	2	0	23	0	0
Community Polyclinic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**190**	**32**	**143**	**2569**	**446**	**352**	**214**	**258**	**440**	**1340**	**291**	**1558**	**285**	**131**	**448**	**82**	**928**	**10**	**40**	**19**	**6444**	**378**	**126**	**5017**	**239**	**422**

Source: Database Profession ASHD MOH

**Others Program: Management Sevices Division, Medical Radiation Surveillance Division, Food Safety & Quality Division, Planning Division, and etc*

Data provided by Diagnostic Radiographer, Environmental Health Officer, Food Service Officer, Medical Record Officer, Occupational Therapist, Physiotherapist and Radiation Therapist include both officer and assistant.

Table 6-7: Regional Distribution of Allied Health Professionals per 100,000 Population, 2014-2018

	Professionals	2014			2015			2016			2017			2018		
		Peninsular	Sabah	Sarawak	Peninsular	Sabah	Sarawak	Peninsular	Sabah	Sarawak	Peninsular	Sabah	Sarawak	Peninsular	Sabah	Sarawak
Clinical Group	Audiologist	142	14	11	146	13	10	159	12	10	150	13	10	166	14	10
	per 100,000 population	0.585	0.372	0.413	0.592	0.341	0.370	0.636	0.308	0.365	0.593	0.329	0.361	0.645	0.375	0.358
	Psychologist (CP/Counsellor)	138	11	13	139	12	11	140	12	14	146	14	14	150	13	15
	per 100,000 population	0.568	0.292	0.488	0.563	0.314	0.407	0.560	0.308	0.511	0.577	0.354	5.061	0.586	0.325	0.537
	DR+RT(Officer)*	108	11	13	148	14	16	141	10	13	133	15	12	131	16	13
	per 100,000 population	0.445	0.292	0.488	0.600	0.367	0.592	0.564	0.256	0.475	0.526	0.379	0.434	0.512	0.400	0.466
	Diagnostic Radiographer	1942	248	266	1951	247	262	1962	250	258	1977	249	253	1983	247	260
	per 100,000 population	7.998	6.589	9.985	7.909	6.473	9.698	7.850	6.411	9.421	7.813	6.298	9.146	7.748	6.177	9.312
	Radiation Therapist	104	19	39	97	18	38	117	31	42	124	37	49	157	41	59
	per 100,000 population	0.428	0.505	1.464	0.393	0.472	1.407	0.468	0.795	1.534	0.490	0.936	1.771	0.613	1.025	2.113
	Food Service Officer	267	39	26	272	32	24	266	33	22	290	37	28	288	37	28
	per 100,000 population	1.100	1.036	0.976	1.103	0.839	0.888	1.064	0.846	0.803	1.146	0.936	1.012	1.125	0.925	1.003
	Medical Physicist	172	12	19	179	17	16	181	16	17	188	15	17	189	13	11
	per 100,000 population	0.708	0.319	0.713	0.726	0.446	0.592	0.724	0.410	0.621	0.743	0.379	0.615	0.738	0.325	0.394
	Medical Social Worker	207	27	29	205	27	28	202	27	29	198	28	26	203	24	24
	per 100,000 population	0.853	0.717	1.089	0.831	0.708	1.036	0.808	0.692	1.059	0.783	0.708	0.940	0.793	0.600	0.860
	Medical Record Officer	354	49	41	374	44	40	358	42	39	341	42	40	365	49	45
	per 100,000 population	1.458	1.302	1.539	1.516	1.153	1.481	1.432	1.077	1.424	1.348	1.062	1.446	1.426	1.225	1.612
	Occupational Therapist	868	157	117	914	158	115	927	161	118	995	169	123	1015	168	122
	per 100,000 population	3.575	4.171	4.392	3.705	4.141	4.257	3.709	4.129	4.309	3.932	4.275	4.446	3.966	4.202	4.370
	Optometrist	227	19	22	249	18	22	243	19	20	242	19	19	249	22	20
	per 100,000 population	0.935	0.505	0.826	1.009	0.472	0.814	0.972	0.487	0.730	0.956	0.481	0.687	0.973	0.550	0.716
	Physiotherapist	1103	176	171	1128	175	169	1171	174	165	1185	180	171	1179	180	172
	per 100,000 population	4.543	4.676	6.419	4.573	4.586	6.256	4.685	4.462	6.025	4.683	4.553	6.182	4.606	4.502	6.160
	Dietitian	289	25	25	326	30	30	327	30	28	350	29	30	350	29	30

	Professionals	2014			2015			2016			2017			2018		
		Peninsular	Sabah	Sarawak	Peninsular	Sabah	Sarawak	Peninsular	Sabah	Sarawak	Peninsular	Sabah	Sarawak	Peninsular	Sabah	Sarawak
Clinical Group	per 100,000 population	1.190	0.664	0.938	1.321	0.786	1.110	1.308	0.769	1.022	1.383	0.734	1.084	1.367	0.725	1.074
	Speech-Language Therapist	73	8	6	96	8	8	100	7	9	101	10	9	114	8	10
	per 100,000 population	0.301	0.213	0.225	0.389	0.210	0.296	0.400	0.180	0.329	0.399	0.253	0.325	0.445	0.200	0.358
	Tutor	1228	0	0	1197	0	0	557	0	0	1132	0	0	1060	0	0
	per 100,000 population	5.057	0.000	0.000	4.852	0.000	0.000	2.228	0.000	0.000	4.474	0.000	0.000	4.141	0.000	0.000
	Dental Therapist	1920	366	412	1931	365	415	2001	360	409	2046	375	417	2064	380	398
	per 100,000 population	7.907	9.724	15.465	7.828	9.566	15.362	8.006	9.232	14.934	8.086	9.485	15.074	8.064	9.504	14.255
	Pharmacy Assistant	3060	523	469	3065	516	476	3137	533	485	3086	518	466	3147	528	478
	per 100,000 population	12.602	13.896	17.605	12.425	13.523	17.620	12.550	13.668	17.709	12.196	13.102	16.846	12.296	13.205	17.120
Laboratory Group	Biochemist	332	32	31	355	45	34	356	41	36	368	44	37	237	47	35
	per 100,000 population	1.367	0.850	1.164	1.439	1.179	1.259	1.424	1.051	1.314	1.454	1.113	1.338	0.926	1.175	1.254
	Biomedical Scientist	61	5	2	71	5	3	72	5	3	69	5	3	74	5	3
	per 100,000 population	0.251	0.133	0.075	0.288	0.131	0.111	0.288	0.128	0.110	0.273	0.126	0.108	0.289	0.125	0.107
	Dental Technologist	712	95	112	722	101	113	705	98	110	723	104	114	703	101	111
	per 100,000 population	2.932	2.524	4.204	2.927	2.647	4.183	2.821	2.513	4.017	2.857	2.631	4.121	2.747	2.526	3.976
	Embryologist	8	2	0	9	1	0	9	1	0	9	2	0	9	2	0
	per 100,000 population	0.033	0.053	0.000	0.036	0.026	0.000	0.036	0.026	0.000	0.036	0.051	0.000	0.035	0.050	0.000
	Forensic Scientist	33	4	5	30	4	5	32	4	5	32	4	5	32	4	4
	per 100,000 population	0.136	0.106	0.188	0.122	0.105	0.185	0.128	0.103	0.183	0.126	0.101	0.181	0.125	0.100	0.143
	Medical Geneticist	19	0	0	19	0	0	19	0	0	19	0	0	19	0	0
	per 100,000 population	0.078	0.000	0.000	0.077	0.000	0.000	0.076	0.000	0.000	0.075	0.000	0.000	0.074	0.000	0.000
	Medical Laboratory Technologist	4836	746	816	4760	751	811	4758	756	812	4790	755	797	4822	757	825
	per 100,000 population	19.917	19.821	30.631	19.295	19.682	30.020	19.036	19.387	29.649	18.931	19.097	28.811	18.840	18.932	29.549
	Microbiologist	273	31	22	304	30	22	310	31	53	316	34	24	316	35	24
	per 100,000 population	1.124	0.824	0.826	1.232	0.786	0.814	1.240	0.795	1.935	1.249	0.860	0.868	1.235	0.875	0.860

	Professionals	2014			2015			2016			2017			2018		
		Peninsular	Sabah	Sarawak	Peninsular	Sabah	Sarawak	Peninsular	Sabah	Sarawak	Peninsular	Sabah	Sarawak	Peninsular	Sabah	Sarawak
Public Health Group	Entomologist	87	14	18	97	14	11	98	13	12	95	13	10	95	13	10
	per 100,000 population	0.358	0.372	0.676	0.393	0.367	0.407	0.392	0.333	0.438	0.375	0.329	0.361	0.371	0.325	0.358
	Environmental Health Officer	3192	668	734	3283	701	751	3388	716	749	3477	717	738	3578	741	742
	per 100,000 population	13.146	17.748	27.553	13.308	18.372	27.799	13.555	18.361	27.349	13.742	18.136	26.678	13.980	18.532	26.576
	Health Education Officer	189	22	16	191	20	17	187	20	18	179	20	17	185	20	17
	per 100,000 population	0.778	0.585	0.601	0.774	0.524	0.629	0.748	0.513	0.657	0.707	0.506	0.615	0.723	0.500	0.609
	Nutritionist	319	38	35	321	42	33	334	39	39	334	43	41	340	39	40
	per 100,000 population	1.314	1.010	1.314	1.301	1.101	1.222	1.336	1.000	1.424	1.320	1.088	1.482	1.328	0.975	1.433
	Food Technologist	612	79	54	574	66	41	564	65	38	586	65	40	585	63	38
	per 100,000 population	2.520	2.099	1.999	2.327	1.730	1.518	2.256	1.667	1.388	2.316	1.644	1.446	2.286	1.576	1.361

Source: Maklumat Kedudukan Perjawatan (Human Resource Post Information) MOH (2014-2018)

*Note: *Combination of Diagnostic Radiographer and Radiation Therapist with degree qualification*

This population ratio not inclusive of cadre, open post, group post and study leave

Data provided by Diagnostic Radiographer, Environmental Health Officer, Food Service Officer, Medical Record Officer, Occupational Therapist, Physiotherapist and Radiation Therapist include both officer and assistant.

Table 6-8: Trend of Allied Health Professionals Workforce Distribution, Vacancy and Population Ratio from 2014 to 2018

Professionals	Grade	2014					2015					2016					2017					2018				
		P	F	PR	C	O	P	F	PR	C	O	P	F	PR	C	O	P	F	PR	C	O	P	F	PR	C	O
Audiologist	41/44/48	208	167	0.544	0	0	208	169	0.542	0	0	201	181	0.572	-	-	201	173	0.540	0	1	201	190	0.587	0	1
Speech-Language Therapist	41/44/48/ 52	203	87	0.283	0		203	112	0.359	0		179	116	0.367	-	-	179	120	0.375	0		179	132	0.408	0	
Physiotherapist	41/44/48	175	137	0.446	0		175	151	0.484	0		200	181	0.572	-	-	175	154	0.481	0		175	156	0.482	0	
	29/32/36/ 38/40	1422	1313	4.276	38		1422	1321	4.236	40		1422	1329	4.201	-	-	1422	1382	4.316	46		1422	1375	4.246	46	
Occupational Therapist	41/44/48	155	129	0.420	0		155	147	0.471	0		155	147	0.465	-	-	155	147	0.459	0		155	147	0.454	0	
	29/32/36/ 38/40	1230	1013	3.299	15		1230	1040	3.335	14		1230	1059	3.348	-	-	1230	1140	3.560	17		1231	1158	3.576	17	
Biochemist	41/44/48/ 52/54/ Jusa C	482	395	1.286	5	14	482	434	1.392	6	25	471	433	1.369	-	-	477	449	1.402	7	27	477	449	1.386	7	29
Biomedical Scientist		81	68	0.221			81	79	0.253			85	80	0.253	-	-	85	77	0.240			85	82	0.253		
Forensic Scientist		44	42	0.137			44	39	0.125			44	41	0.130	-	-	44	41	0.128			44	40	0.124		
Medical Geneticist		22	19	0.062			22	19	0.061			22	19	0.060	-	-	22	19	0.059			22	19	0.059		
Embryologist		12	10	0.033			12	10	0.032			12	10	0.032	-	-	12	11	0.034			12	11	0.034		
Microbiologist		414	326	1.062			414	356	1.142			409	364	1.151	-	-	410	374	1.168			410	375	1.158		
Medical Physicist		254	203	0.661			254	212	0.680			253	214	0.676	-	-	254	220	0.687			253	213	0.658		
Nutritionist		450	392	1.277			450	396	1.270			444	412	1.302	-	-	444	418	1.305			443	419	1.294		
Entomologist		137	119	0.388			137	122	0.391			137	123	0.389	-	-	137	118	0.368			137	118	0.364		
Biochemical/ Microbiologist		1	0	0.000			1	0	0.000			NA	NA	NA	-	-	1	0	0.000			1	0	0.000		
DR+ RT*	41/44/48	192	132	0.430	0	0	192	178	0.571	0	0	192	164	0.518	-	-	192	160	0.500	0	0	192	160	0.494	0	0
Diagnostic Radiographer	29/32/36	2662	2456	7.998	1	0	2662	2460	7.888	1	0	2662	2470	7.808	-	-	2662	2479	7.741	1	0	2663	2490	7.689	1	0
Radiation Therapist		290	162	0.528	0	0	290	153	0.491	0	0	290	190	0.601	-	-	290	210	0.656			290	257	0.794		

Professionals	Grade	2014					2015					2016					2017					2018				
		P	F	PR	C	O	P	F	PR	C	O	P	F	PR	C	O	P	F	PR	C	O	P	F	PR	C	O
Dietitian	41/44/48/ 52/54/ Jusa C	442	339	1.104	2	1	442	386	1.238	3	1	439	385	1.217	-	-	439	409	1.277	6	1	440	409	1.263	6	0
Optometrist		307	268	0.873	0	1	307	289	0.927	0	1	306	282	0.891	-	-	307	280	0.874	0	2	306	291	0.899	0	3
Medical Social Worker		273	263	0.856	0	1	273	260	0.834	0	1	273	258	0.816	-	-	273	252	0.787	0	1	273	251	0.775	0	0
Psychologist (Clinical Psychologist/ Counsellor)		188	162	0.528	0	0	188	162	0.519	0	0	189	166	0.525	-	-	189	174	0.543	0	0	208	178	0.550	0	0
Health Education Officer	41/44/48/ 52/54	248	227	0.739	0	0	248	228	0.731	0	1	248	225	0.711	-	-	248	216	0.675	0	1	249	222	0.686	0	0
Medical Record Officer	41/44/48	53	49	0.160	0	0	53	49	0.157	0	0	53	49	0.155	-	-	53	46	0.144	0	0	53	50	0.154	0	0
	27/29/32/ 36/40	454	395	1.286	0	0	454	409	1.311	0	0	455	390	1.233	-	-	455	377	1.177	0	0	455	409	1.263	0	0
Dental Technologist	29/32/36/ 40	988	919	2.993	0	11	988	936	3.001	0	10	988	913	2.886	-	-	988	941	2.939	0	11	989	915	2.825	0	9
Environmental Health Officer	29/30/32/ 36/41/42/ 44/48	5261	4787	15.589	28	0	5013	4735	15.183	21	0	5134	4853	15.341	-	-	5134	4932	15.402	25	0	5281	5061	15.628	22	0
Medical Laboratory Technologist	29/32/36/ 40	6721	6398	20.835	0	0	6721	6322	20.272	0	0	6722	6326	19.998	-	-	6722	6342	19.805	0	0	6723	6404	19.775	0	0
Food Service Officer	41/44	33	27	0.088	0	0	33	30	0.096	0	0	33	30	0.095	-	-	33	30	0.094	0	0	33	30	0.093	0	0
	27/29/32/ 36/38	366	305	0.993	0	0	366	298	0.956	0	0	336	291	0.920	-	-	336	325	1.015	0	0	336	323	0.997	0	0
Food Technologist	41/44/48/52/ 54/C/B	530	440	1.433	30	0	530	485	1.555	35	0	528	476	1.505	-	-	528	502	1.568	38	0	529	500	1.544	38	0
	29/32/38	206	197	0.642	5	0	206	196	0.628	5	0	206	191	0.604	-	-	206	189	0.590	8	0	206	186	0.574	8	0
Dental Therapist	29/32/36/ 38/40	2972	2698	8.786	0	22	2972	2711	8.693	0	22	2923	2770	8.757	-	-	2923	2838	8.862	0	22	2924	2842	8.776	0	21
Tutor	41/44/48/ 52/54	1548	1228	3.999	0	0	1547	1197	3.838	0	0	1407	557	1.761	-	-	1390	1132	3.535	0	0	1390	1060	3.273	0	0
Pharmacy Assistant	29/32/36/ 38/40	4280	4052	13.195	1	0	4280	4057	13.009	6	1	4280	4155	13.135	-	-	4280	4070	12.710	33	1	4281	4153	12.824	42	2

Source: Maklumat Kedudukan Perjawatan (Human Resource Post Information) MOH (2014-2018)

Note: P=Post, F = Filled, PR= Population Ratio, per 100,000 populations, C = Cadre, O = Others (open post, group post etc)

This population ratio not inclusive of cadre, open post, group post and study leave

Data provided by Diagnostic Radiographer, Environmental Health Officer, Food Service Officer, Medical Record Officer, Occupational Therapist, Physiotherapist and Radiation Therapist include both officer and assistant

Table 6-8 shows the trends of allied health workforce distribution, establishment posts filled and unfilled (vacancies), and population ratios from 2014 to 2018. For the year 2018, vacancies existed in all professions. For most professions the vacancy numbers are relatively small and exceed 50 in Occupational Therapy (n=73), Diagnostic Radiography (n=173), Dental Technology (n=74), Environmental Health (n=220) Medical Laboratory Technology (n=319), Dental Therapy (n=82), Tutors (n=330), Pharmacy Assistant (n=128). The numbers of yearly AHP students graduating (Table 7-2) indicates that graduates are available to fill these positions; however, there is a need to consider a strategy for transferring vacant posts to areas that require strengthening in response to epidemiological (NCDs) and demographic (ageing) changes.

Table 6-9 shows the distribution of the allied health workforce by states in Malaysia. This table provides more details on the numbers of allied health professionals in each State. Like most allied health workforce, the Radiation Therapists, Medical Geneticists, and Embryologists are mainly deployed in Klang Valley, West Malaysia. Some professions like Audiology, Speech-Language Therapy, Clinical Psychology, Radiation Therapy, Biomedicine, Forensic Science, and Embryology is not available in Labuan and Perlis due to a small number of health facilities in those states. Labuan has one (1) hospital with two (2) health clinics, and Perlis operates with a hospital and nine (9) health clinics only. The state's distribution of AHP is essential to estimate the human resource gap, planning needs, and placement in the future.

Table 6-10 shows the distribution of allied health workforce by grades and flexi-grades. This table is useful in calculating the allied health professionals staff budget, as mean salaries in each grade can be used to approximate workforce's cost.

Table 6-11 shows the trending of employment of the allied health workforce in the Ministry of Health 2010-2018, demonstrating a reduction in new employment since 2015.

Table 6-9: Distribution of AHP Workforce by States in Malaysia

	Professionals	States																
		WPKL	Putrajaya	Labuan	Perlis	Pulau Pinang	Kedah	Perak	Selangor	Negeri Sembilan	Melaka	Johor	Pahang	Terengganu	Kelantan	Sabah	Sarawak	Total
Clinical Group	Audiologist	18	6	0	4	6	15	17	34	9	6	21	11	9	10	14	10	**190**
	Clinical Psychologist	8	2	0	0	2	1	3	4	1	1	3	1	1	1	1	3	**32**
	Counsellor	11	13	1	2	5	7	10	24	6	3	17	4	6	7	13	14	**143**
	Diagnostic Radiographer	159	73	11	35	158	174	216	325	122	80	273	170	116	140	260	257	**2569**
	Dietitian	50	32	3	5	20	23	35	64	19	13	51	22	24	19	36	30	**446**
	Food Service Officer	22	8	1	4	12	25	41	48	17	11	39	24	14	21	37	28	**352**
	Medical Physicist	31	66	0	1	15	7	5	19	4	4	20	5	5	5	15	12	**214**
	Medical Social Worker	28	16	1	4	13	12	19	38	9	5	27	16	12	11	24	23	**258**
	Medical Record Officer	34	35	2	7	18	26	40	45	16	15	43	25	22	23	46	43	**440**
	Occupational Therapist	118	20	5	19	87	78	141	126	69	44	145	73	61	64	168	122	**1340**
	Optometrist	22	14	2	4	16	19	25	48	11	9	30	17	16	16	21	21	**291**
	Physiotherapist	151	46	7	21	87	86	118	170	65	47	140	97	79	94	183	167	**1558**
	Radiation Therapist	67	64	0	0	2	0	0	0	0	0	48	0	0	0	44	60	**285**
	Speech-Language Therapist	19	3	0	3	6	11	13	22	6	4	13	5	4	4	8	10	**131**

	Professionals	States																
		WPKL	Putrajaya	Labuan	Perlis	Pulau Pinang	Kedah	Perak	Selangor	Negeri Sembilan	Melaka	Johor	Pahang	Terengganu	Kelantan	Sabah	Sarawak	Total
Laboratory Group	Biochemist	90	24	2	6	17	25	29	57	14	11	34	24	19	21	40	35	448
	Biomedical Scientist	14	2	0	0	7	3	7	16	3	3	11	3	2	3	6	2	82
	Dental Technologist	42	7	0	19	46	70	74	92	55	33	65	62	72	77	105	109	928
	Embryologist	4	0	0	0	0	2	0	0	0	0	0	0	2	0	2	0	10
	Forensic Scientist	5	1	0	0	2	2	2	8	2	1	4	3	2	1	4	3	40
	Medical Geneticist	18	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	19
	Medical Laboratory Technologist	657	82	27	77	287	360	535	724	284	215	562	382	273	397	752	830	6444
	Microbiologist	58	17	3	5	15	17	31	64	12	14	40	20	14	17	29	22	378
Public Health Group	Entomologist	8	9	1	3	5	6	9	14	4	5	11	10	7	9	13	12	126
	Environmental Health Officer	181	99	37	90	236	358	345	503	207	136	373	355	286	338	727	746	5017
	Health Education Officer	39	47	2	5	8	10	13	18	7	6	15	13	5	11	22	18	239
	Nutritionist	24	61	5	7	17	23	30	34	21	13	27	35	23	26	38	38	422

Source: Database Profession AHSD MOH
Data provided by Diagnostic Radiographer, Environmental Health Officer, Food Service Officer, Medical Record Officer, Occupational Therapist, Physiotherapist and Radiation Therapist include both officer and assistant.

Table 6-10: Distribution of AHP Workforce by Grades and Flexi-Grade

	Professionals	GRADES												FLEXI-GRADES	
		29	32	36	38	40	42	41	44	48	52	54	JUSA	29/32	41/44
Clinical Group	Audiologist	-	-	-	-	-	-	116	60	14	-	-	-	-	-
	Clinical Psychologist	-	-	-	-	-	-	25	5	1	1	-	-	-	-
	Counsellor	3	-	-	-	-	-	67	51	18	4	-	-	-	-
	Diagnostic Radiographer	1799	509	134	-	-	57	45	23	1	-	-	-	-	1**
	Dietitian	-	-	-	-	-	-	272	99	46	13	15	1	-	-
	Food Service Officer	230	74	-	18	-	-	30	-	-	-	-	-	-	-
	Medical Physicist	-	-	-	-	-	-	95	57	34	23	4	1	-	-
	Medical Social Worker	-	-	-	-	-	-	107	104	27	14	6	-	-	-
	Medical Record Officer	245	124	21	-	1	-	14	35	-	-	-	-	-	-
	Occupational Therapist	895	175	49	25	21	-	121	35	9	-	-	-	1	9
	Optometrist	-	-	-	-	-	-	119	110	41	11	7	3	-	-
	Physiotherapist	1016	252	78	29	16	-	111	40	8	-	-	-	7	1
	Radiation Therapist	160	69	21	-	-	11	15	9	-	-	-	-	-	-
	Speech-Language Therapist	-	-	-	-	-	-	3	38	10	-	-	-	-	80
Laboratory Group	Biochemist	-	-	-	-	-	-	226	122	65	22	9	1	-	3
	Biomedical Scientist	-	-	-	-	-	-	47	35	-	-	-	-	-	-
	Dental Technologist	515	283	44	12	4	-	-	-	-	-	-	-	70	-
	Embryologist	-	-	-	-	-	-	7	3	-	-	-	-	-	-
	Forensic Scientist	-	-	-	-	-	-	19	19	2	-	-	-	-	-
	Medical Geneticist	-	-	-	-	-	-	13	4	2	-	-	-	-	-
	Medical Laboratory Technologist*	4215	1169	167	85	37	-	-	-	-	-	-	-	744	-
	Microbiologist	-	-	-	-	-	-	165	117	50	29	15	2	-	-
Public Health	Entomologist	-	-	-	-	-	-	62	38	15	8	3	-	-	-
	Environmental Health Officer	3748	790	191	-	-	106	45	44	5	1	1	-	83	3**
	Health Education Officer	-	-	-	-	-	-	108	69	42	18	2	-	-	-
	Nutritionist	-	-	-	-	-	-	272	93	34	14	7	2	-	-

Source: Database Profession AHSD MOH

*Note: *Incomplete information for 27 out of 6444 **gred 41/42/44*
Data provided by Diagnostic Radiographer, Environmental Health Officer, Food Service Officer, Medical Record Officer, Occupational Therapist, Physiotherapist and Radiation Therapist include both officer and assistant.

Table 6-11: Trending of Employment of AHP Workforce in the Ministry of Health 2010-2018

	Professionals	Employment								
		2010	2011	2012	2013	2014	2015	2016	2017	2018
Clinical Group	Audiologist	20	4	28	22	26	2	-	-	23
	Clinical Psychologist	2	-	2	2	6	-	-	7	5
	Counsellor	10	-	-	29	25	8	-	-	-
	Diagnostic Radiographer	364	98	411	146	85	70	28	37	29
	Dietitian	38	11	20	26	33	54	27	2	-
	Food Service Officer	35	9	19	99	17	10	7	30	2
	Medical Physicist	16	8	19	19	46	14	6	-	-
	Medical Social Worker	20	10	5	15	58	4	-	-	6
	Medical Record Officer	39	-	-	20	51	15	-	-	37
	Occupational Therapist	79	84	91	150	223	80	32	87	51
	Optometrist	9	3	35	21	13	20	2	-	9
	Physiotherapist	100	60	221	168	230	90	25	69	27
	Radiation Therapist	9	13	-	8	15	5	38	20	47
	Speech-Language Therapist	8	-	12	1	25	22	-	15	17
Laboratory Group	Biochemist	63	2	19	14	59	27	14	2	-
	Biomedical Scientist	10	-	2	14	10	10	-	-	-
	Dental Technologist	37	50	51	48	48	47	-	53	-
	Embryologist	1	1	-	-	4	2	1	-	-
	Forensic Scientist	7	-	1	5	4	1	-	-	-
	Medical Geneticist	1	-	-	2	10	-	-	-	-
	Medical Laboratory Technologist*	417	432	464	454	365	115	185	176	202
	Microbiologist	39	15	-	33	35	27	15	1	-
Public Health Group	Entomologist	12	-	4	3	29	7	-	-	-
	Environmental Health Officer	352	241	502	495	210	239	194	182	183
	Health Education Officer	-	-	24	16	41	8	-	-	8
	Nutritionist	83	9	24	91	32	45	7	1	-

Source: Database Profession AHSD MOH

*Note: *Incomplete information (no date of appointment)*

Data provided by Diagnostic Radiographer, Environmental Health Officer, Food Service Officer, Medical Record Officer, Occupational Therapist, Physiotherapist and Radiation Therapist include both officer and assistant.

THE MANAGEMENT OF THE AHP WORKFORCE

7. The Management of the AHP Workforce

7.1. Problems of HRH Information on Allied Health Professions

The Health Systems in Transition Report (2013) provided limited data on AHP compared to doctors, dentists, pharmacists, and nurses, but it did identify four (4) main problems in the HRH information system. Implementing the AHP Act will address these problems, and the restructuring of the AHSD has assumed responsibility for addressing these following issues:

a. HR information is collected through several overlapping systems. There is inadequate coordination between these systems.
b. The data obtained and maintained by statutory licensing agencies for HRH professionals are limited to some professions.
c. There is no information on market demand or unemployment for various categories of HRH.
d. No single agency has the responsibility and capacity to analyse the HRH situation and make HRH projections based on national needs.

The inability to accurately account for the workforce or to fully understand the characteristics of supply and demand for the AHP is common to many countries reviewed. Over many years, this lack of information has restricted the strategic potential for collaborative service provision by AHP in the nation's health care.

7.2. Information Required to Set AHP Staffing Assumptions

HR assumptions are informed by current data on production, supply, deployment, retention and quality projected into the future and applied to the progressive roll-out of national strategic plans. Detailed information is now compiled on factors affecting the supply of AHP in the current workforce, such as gender, age, race, length of career, deployment, attrition from training and service, vacancies, time to fill vacancies and many other potentially important indicators.

The production of health workers in the public sector needs to be coordinated with the capacity to hire graduates into the workforce, hence; budget submissions should include posts for eligible graduates according to projected vacancies.

Without standardised and comparable data in overlapping information systems, the utility of indicators such as the number of existing counts of healthcare professionals or professionals-to-population ratio is limited and subject to misinterpretation. A baseline of current staffing derived from payroll datasets is useful, although due to AHP distribution among several data sets, the count is likely to be indicative rather than accurate. AHSD is currently compiling national information on AHP in MOH, some of which are included in this report.

A number or methods are available for establishing the assumptions that will determine the future projections of workforce need as listed below:

a. Baselines
The numbers of existing AHP personnel can be obtained from administrative records of employers and registration providers, from academic surveys of health providers by profession group, and National Census data and Labour Force Surveys.

b. Workforce to population ratios
These crude measures are only useful when other methods of estimation are completed and service levels (i.e. facility role delineation) are decided.

c. Role delineation policy for public sector facilities
Public sector staffing (and equipment) allocations are made on the defined role and level of each health facility, and the size of the population served and projected. These provide a forecast of deployment needs by profession, which if projected over time, can indicate training needs.

d. Projections based on procedural throughput
This approach is suitable for hospitals and public sector delivery requirements. Baseline information should exist by the facility and should include the number of hours spent in clinical practice or other settings. The critical measure of staffing adequacy is the contribution to public waiting times. Systems such as Workforce Indicators Staffing Needs (WISN) utilises such information.

e. Forecasted demand and public sector delivery requirements
The number of tests, procedures or interventions requiring AHP staff or support could be calculated for major conditions based on current and projected epidemiology. Usually, forecasting is done based on previous experience year's and using a multiplier based on population growth to assess future demand by profession and geography.

f. Benchmarking or workload staffing needs
Benchmarking, such as WISN is healthcare essentially workload allocation based on the scope of practice applied to particular settings. Evaluation of staff workloads allows managers to maximise AHP resources and hence provide better patient outcomes. Benchmarking can be carried out with the primary objective of clinical improvement of outcomes and/or processes of service delivery. Benchmarking can also have the goal of improving administration and managing costs.

g. A combination of the above
Guided by policy (what the government wants to achieve) and finance (how much it can afford to spend).

h. The current major challenge for the MOH in an era of restricted human resource growth in the public sector and the need for health system reform is to guide policy on staffing targets/norms for AHP in different service levels and settings.

7.3. The Projection Model

The Projection Model customised for the Malaysia context was designed to estimate the workforce required to deliver an agreed package of health services in MOH. The tool helps to set targets for production and recruitment of staff based on assumptions concerning the staff needed at each level of the health system.

The Model facilitates planners to determine the implications of different policy scenarios on the production, recruitment and deployment of health personnel. In the absence of complete data set, the interactive tool could also be used to test 'what – if' assumptions on the costs associated with the training and deployment of health personnel and to benchmark the projections against normative population density outcomes. The tool could be applied at both the national and sub-national levels (Province or District levels) and may include the entire or sub-set of the health workforce.

Hence, the projection tool may help to identify the training requirements and cost implications of deploying particular cadres of staff in different health settings. It also to highlight the impacts of decentralisation of health services, task shifting, multi-skilling and other strategies to ensure adequate access to health services.

As all projections are based on assumptions of what might happen in the future, they must be regularly re-evaluated and adjusted. While the model provides a macro-level overview of human resource requirements, further detailed planning is required at the local level to adjust for different utilisation rates, productivity factors, priority health needs and other relevant variables.

The application of the Projection Model in Malaysia requires an input of information concerning:

- The level and number of health facilities as well as administrative and academic units requiring health personnel
- The cadres of staff deployed in the health system
- The desired staffing norms for each level of the health system
- The current staffing at each level of the health system
- The average attrition rates from training and employment
- The current salaries and allowances
- The costs associated with training
- Assumptions concerning changes in the health services coverage

Based on this information, the model produces a series of outputs including:

- The staffing gaps that need to be bridged to attain the desired staffing norms
- The production targets to reach the required staffing over the projection period with annual growth targets
- The recruitment targets needed to achieve the staffing targets with consideration of expected attrition from the workforce
- The training and employment costs associated with the growth targets
- The health personnel to population density achieved through this plan
- The impact of various assumptions related to increases in salaries and allowances (for example incentives for health workers in remote areas)
- The effect of changes in the organisation of the health system network (for example increase in the number of the health centre and/or district hospitals and/or increase in the number of academic staff and/or central office professional staff)

During the current assignment, the Projection Model was customised to the AHP profile in the MOH context. Tables 7-1 and Table 7-2 below are based on preliminary data entered to the Projection Model showing an estimate of the total recruitment requirements for the projection period for the different categories of staff and the annual requirements for the production of graduates based on these assumptions. The projection model also shows the additional annual cost associated with bridging the assumed staffing gaps and benchmarks of this growth in relation to population growth during the projection period.

Table 7-1: Recruitment Need in Public Health Sector Based on Staffing Assumptions for MOH Facilities and Estimated Attrition Based on Retirement

No.	Cadre of Staff	2018	2027	2018 to 2027			Average Recruitment per Year
		Total Existing Post at Health Facilities	Total Need	Total Gap	Total Attrition for Entire Period	Total Recruitment Requirements	
1	Audiologist	201	344	-143	-10	153	15
2	Biochemist	498	673	-175	-55	230	23
3	Biomedical Scientist	83	232	-149	-7	156	16
4	Clinical Psychologist	32	102	-70	-45	115	12
5	Counsellor	152	685	-533	-13	546	55
6	Dental Technologist	937	1,207	-270	-138	408	41
7	Diagnostic Radiographer	2810	5,450	-2640	-244	2884	288
8	Dietitian	453	856	-403	-37	440	44
9	Embryologist	12	26	-14	-9	23	2
10	Entomologist	138	191	-53	-7	60	6
11	Environmental Health Officer	5182	6,186	-1004	-498	1502	150
12	Food Service Officer	368	523	-155	-47	202	20
13	Forensic Scientist	46	97	-51	-2	53	5
14	Health Education Officer	254	410	-156	-35	191	19
15	Medical Geneticist	19	88	-69	-1	70	7
16	Medical Laboratory Technologist*	6723	8,901	-2178	-747	2925	293
17	Medical Physicist	255	425	-170	-21	191	19
18	Medical Record Officer	488	712	-224	-74	298	30
19	Medical Social Worker	276	560	-284	-36	320	32
20	Microbiologist	425	626	-201	-46	247	25
21	Nutritionist	446	777	-331	-32	363	36
22	Occupational Therapist	1361	2,857	-1496	-117	1613	161
23	Optometrist	303	524	-221	-29	250	25
24	Physiotherapist	1651	3,714	-2063	-152	2215	222
25	Radiation Therapist	330	472	-142	-21	163	16
26	Speech-Language Therapist	164	618	-454	-9	463	46
	Total	**23,607**	**37,256**	**-13,649**	**-2,432**	**16,081**	**1,608**

Source: *1. Database Profession AHSD MOH, except * from Maklumat Kedudukan Perjawatan (Human Resource Post Information, MOH 2018)*
2. The Projection Model 2019, WHO Consultant

Note: *Total existing staff at Health facilities are total post, including those pursues post-graduate study, open-post and group post in MOH. As all projections are based on assumptions of what might happen in the future, they must be regularly re-evaluated and adjusted for different utilisation rates, productivity factors, priority health needs and other relevant variables.*
Data provided by Diagnostic Radiographer, Environmental Health Officer, Food Service Officer, Medical Record Officer, Occupational Therapist, Physiotherapist and Radiation Therapist include both officer and assistant.

This estimation is based on sanctioned positions. Some of these positions may be temporarily vacant due to budget restrictions, lack of appropriate candidates, maternity leave, illness and other reason. Attrition is based on expected retirement of staff during the projection period and assumption of loss of 5% of the workforce over the projected period (10 years) due to other reasons such as resignation due to migration, change of career, family matters etc.

Table 7-2 is projecting the training requirements, showing that current estimated volume of graduates yearly exceeding the public sector recruitment requirements due to limited recruitment quotas and budget restrictions for all categories of allied health professionals in Ministry of Health Malaysia.

Table 7-2: Training Requirements Based on Projected Needs for Graduates by Categories of Allied Health Professionals

Allied Health Professionals	Length of Course (Years of Training)	Training Requirement		Estimated Number of Graduate per Year
		Total Number of Graduates Required During the Projection Period (2017-2027)	Number of Graduates Required Each Year in MOH	
Audiologist	4	150	15	46
Biochemist	4	159	23	146
Biomedical Scientist	4	287	16	891
Clinical Psychologist**	4	115	12	23
Counsellor	4	819	55	678
Dental Technologist	3	314	41	37
Diagnostic Radiographer	3 or 4	3,136	288	112
Dietitian	4	439	44	242
Embryologist*	4	22	2	-
Entomologist	4	24	6	50
Environmental Health Officer	3 or 4	1,029	150	247
Food Service Officer	3 or 4	1,314	20	314
Forensic Scientist	4	59	5	86
Health Education Officer*	4	-	19	-
Medical Geneticist	4	93	3	41
Medical Laboratory Technologists	3	3,250	293	200
Medical Physicist*	4	449	19	-
Medical Record Officer	3 or 4	352	30	45
Medical Social Worker	4	319	32	394
Microbiologist	4	253	25	114
Nutritionist	4	359	36	114
Occupational Therapist	3 or 4	1,868	161	54
Optometrist	4	250	25	176
Physiotherapist	3 or 4	3,883	222	463
Radiation Therapist	3 or 4	742	16	46
Speech-Language Therapist	4	464	46	45

Source: *1. Ministry of Higher Education*
2. The Projection Model 2019, WHO Consultant

Notes: ** Data not available because multiple qualification entry*
*** Minimum entry with master's level*
Data provided by Diagnostic Radiographer, Environmental Health Officer, Food Service Officer, Medical Record Officer, Occupational Therapist, Physiotherapist and Radiation Therapist include both officer and assistant.

EDUCATION AND TRAINING OF THE AHP WORKFORCE

8. Education and Training of the AHP Workforce

The AHSD is working on a compilation of AHP standards, scope of practice, a listing of recognised qualifications, the standard curriculum, expert speciality functions, requirements for practice for Malaysians and non-Malaysians. The criteria for renewal of the practising certificate, requirements for registration as an expert, a 'grandfather clause' for people practising before the enforcement of Act 774 were articulated, and a list of professional bodies are also collected. This document is in the draft, but it indicates a strong push towards establishing the baseline requirements for the implementation of the Allied Health Professions Act.

All programmes are reviewed by the Malaysia Qualifications Agency (MQA) and must meet the criteria of Accreditation, Equivalency and Standards Committees, to manage the growth and the quality of tertiary education programmes in Malaysia. Accreditation assessment of programmes taught in the different institution should only use commonly agreed training competencies. The Ministry of Health employs a workforce from local and foreign accredited programmes.

The major training issues that have been identified in the Health Systems in Transition Report 2013 and during the WHO workshop in January 2019 is the proliferation of training schools/higher education institutions and the large numbers of students entering allied health-related training. While concurrently, the public service reform is ongoing with a freeze on new public sector appointments. The government has increased the number of training places in university teaching hospitals, run by the Ministry of Higher Education, but the potential to recruit graduates is currently limited. Therefore, the supply of health care workforce, including allied health professionals supersedes the number of demands.

A proportion of these new graduates may find employment in the private sector, which can be anticipated to continue its growth as the Malaysian economy grows; and as technological developments create new practice opportunities. The scope of services provided by AHP will expand as traditional models of health change according to government-initiated reforms, new technologies, rising demand and further skills development. Whereby AHP could offer a cost-effective substitute for traditional acute care roles towards digitally-driven services and increase their involvement in public health, prevention and treatment of NCDs.

Malaysia's HIT Report 2013 listed nine (9) essential public health functions but did not list AHP functions that could have an impact on public health. However, to adequately respond to Malaysia's changing demographics and epidemiology, AHP training programmes will need to refocus on the issues relevant to the prevention, early diagnosis, early intervention and rehabilitation in community settings. This refocusing effort will be made by collaboration with training colleges and universities to apprise them of the changing circumstances, requirements and health system forms with special focus on competency enhancement in special areas and strengthen service delivery. Upgrading qualification from diploma to a degree or higher level will enable autonomous practice and facilitate the management of more complex cases efficiently.

The National Higher Education Strategic Plan 2011 - 2015 forecasts the expansion of training places available for international students. Concurrently, AHP career paths are being upgraded to differentiate staff with degree or diploma level qualifications. The continuing strategic dialogue between the Ministry of Health and Higher Education will result in improved planning for intakes, curriculum content and opportunities for practice and forecast feasible career pathways.

Questions that remain for consideration are whether the training programs accredited by the MQA and regulated by the MAHPC will align with those of other ASEAN nations. Will AHP eventually be included in the ASEAN Framework Agreement on Services (currently including doctors and nurses) and to what degree would that increase AHP mobility within the region?

Table 8-1 shows the Entry Level Qualifications and Type of Training Institutions for AHP entering the Ministry of Health Malaysia. The data set is incomplete for some profession, but the table identifies the involvement of public, private and foreign training institutions. The public institutions are the primary sources of all AHP entering MOH workforce while the private sector is also training significant numbers of Diagnostic Radiographers, Physiotherapists, Medical Laboratory Technologists and Environmental Health Officers. Data shows, 90.1% from local public institutions, 9.3% from local private institutions and only 0.6% trained in overseas. Of the total 20,213 allied health, 16,087 (79.6%) have entered the MOH workforce with diploma qualification, while 4,020 (19.9%) with Degree or higher qualification and 106 (0.5%) with certificate qualification. As of 31st December 2018, there are 1,367 (8.5%) of the diploma holders have continued further studies and have degree in various field including non-allied health fields.

Table 8-1: Entry Level Qualification and Type of Training Institutions

Category of AHP	Professionals	College/ University	Entry Level (Number)			
			Certificate	Diploma	Degree	Masters
Clinical Group	Audiologist	Public	-	-	190	-
		Private	-	-	0	-
		Foreign	-	-	0	-
	Clinical Psychologist	Public	-	-	-	24
		Private	-	-	-	7
		Foreign	-	-	-	1
	Counsellor	Public	-	0	128	-
		Private	-	3	8	-
		Foreign	-	0	4	-
	Diagnostic Radiographer	Public	-	1815	53	-
		Private	-	697	2	-
		Foreign	-	0	2	-
	Dietitian	Public	-	-	432	-
		Private	-	-	11	-
		Foreign	-	-	3	-
	Food Service Officer	Public	11	291	30	-
		Private	0	20	0	-
		Foreign	0	0	0	-
	Medical Physicist	Public	-	-	214	-
		Private	-	-	0	-
		Foreign	-	-	0	-
	Medical Social Worker	Public	-	5	250	-
		Private	-	0	2	-
		Foreign	-	0	1	-
	Medical Record Officer	Public	95	275	42	-
		Private	0	27	1	-
		Foreign	0	0	0	-
	Occupational Therapist	Public	-	1166	137	-
		Private	-	0	0	-
		Foreign	-	0	37	-
	Optometrist	Public	-	-	284	-
		Private	-	-	5	-
		Foreign	-	-	2	-

Category of AHP	Professionals	College/ University	Entry Level (Number)			
			Certificate	Diploma	Degree	Masters
Clinical Group	Physiotherapist	Public	-	1173	98	-
		Private	-	225	12	-
		Foreign	-	0	50	-
	Radiation Therapist	Public	-	269	14	-
		Private	-	0	2	-
		Foreign	-	0	0	-
	Speech-Language Therapist	Public	-	-	131	-
		Private	-	-	0	-
		Foreign	-	-	0	-
Laboratory Group	Biochemist	Public	-	-	439	-
		Private	-	-	3	-
		Foreign	-	-	6	-
	Biomedical Scientist	Public	-	-	79	-
		Private	-	-	2	-
		Foreign	-	-	1	-
	Dental Technologist	Public	-	928	-	-
		Private	-	0	-	-
		Foreign	-	0	-	-
	Embryologist	Public	-	-	10	-
		Private	-	-	0	-
		Foreign	-	-	0	-
	Forensic Scientist	Public	-	-	40	-
		Private		-	0	
		Foreign	-	-	0	-
	Medical Geneticist	Public	-	-	19	-
		Private	-	-	0	-
		Foreign	-	-	0	-
	Medical Laboratory Technologist*	Public	-	3742	-	-
		Private	-	513	-	-
		Foreign	-	0	-	-
	Microbiologist	Public	-	-	368	-
		Private	-	-	3	-
		Foreign	-	-	7	-
Public Health Group	Entomologist	Public	-	-	125	-
		Private	-	-	0	-
		Foreign	-	-	1	-
	Environmental Health Officer	Public	-	4614	70	-
		Private	-	324	9	-
		Foreign	-	0	0	-
	Health Education Officer	Public	-	-	227	-
		Private	-	-	7	-
		Foreign	-	-	5	-
	Nutritionist	Public	-	-	418	-
		Private	-	-	0	-
		Foreign	-	-	4	-

Source: Database Profession AHSD MOH

*Notes: *Incomplete information for 2189 out of 6444*
Data provided by Diagnostic Radiographer, Environmental Health Officer, Food Service Officer, Medical Record Officer, Occupational Therapist, Physiotherapist and Radiation Therapist include both officer and assistant

Recognising the importance of human capital development to meet client demand and healthcare transformation in years to come, the AHSD supports continuous professional development. The MOH is committed to providing scholarship for post-graduate studies as an initiative to strengthen the human resources potential in the public sector. A total of 17 post-graduate scholarships were awarded in the year 2018 and 30 in 2019 for allied health professionals. Until the end of 2018, a total of 45 allied health professionals managed to complete a PhD in various allied health fields. Another 991 officers (excluding 32 Clinical Psychologists with master's as entry-level) have acquired master's qualification. A total of 1,134 allied health professionals acquired a post-graduate diploma in various fields. Training Need Analysis and Training Plan is done and reviewed periodically to fulfil the healthcare competency need and prepare the professions for the need.

Table 8-2 shows the workforce's range of qualification levels emphasising those with Post Graduate Qualifications in MOH.

Table 8-2: Number of AHP by Level of Qualification

	Professionals	Education Level (Number)					
		Certificate	Diploma	Degree	PG Dip	Masters	PHD
Clinical Group	Audiologist	-	-	190	-	9	-
	Clinical Psychologist	-	-	-	-	32	1
	Counsellor	-	3	2	-	-	-
		-	-	140	-	75	1
	Diagnostic Radiographer	-	2512	162	203	5	-
		-	-	57	7	7	-
	Dietitian	-	-	446	2	55	4
	Food Service Officer	11	-	-	-	-	-
		-	311	64	3	1	-
		-	-	30	-	8	-
	Medical Physicist	-	-	214	26	89	5
	Medical Social Worker	-	5	-	-	1	-
		-	-	253	1	63	3
	Medical Record Officer	95	1	36	-	3	-
		-	302	120	-	4	-
		-	-	43	-	6	-
	Occupational Therapist	-	1166	88	16	-	-
		-	-	174	11	21	-
	Optometrist	-	-	291	1	25	2
	Physiotherapist	-	1398	92	21	-	-
		-	-	160	5	5	-
	Radiation Therapist	-	269	11	8	-	-
		-	-	16	-	2	-
	Speech-Language Therapist	-	-	131	4	10	1

	Professionals	Education Level (Number)					
		Certificate	Diploma	Degree	PG Dip	Masters	PHD
Laboratory Group	Biochemist	-	-	448	7	117	10
	Biomedical Scientist	-	-	82	2	12	1
	Dental Technologist	-	928	-	-	-	-
	Embryologist	-	-	10	-	5	-
	Forensic Scientist	-	-	40	-	16	1
	Medical Geneticist	-	-	19	-	6	-
	Medical Laboratory Technologist*	-	4255	202	226	4	-
	Microbiologist	-	-	378	56	92	6
Public Health Group	Entomologist	-	-	126	38	25	1
	Environmental Health Officer	-	4938	626	277	24	-
		-	-	79	8	12	-
	Health Education Officer	-	-	239	207	207	8
	Nutritionist	-	-	422	5	82	1

Source: Database Profession AHSD MOH
*Note: *Incomplete information for 2189 out of 6444*
Data provided by Diagnostic Radiographer, Environmental Health Officer, Food Service Officer, Medical Record Officer, Occupational Therapist, Physiotherapist and Radiation Therapist include both officer and assistant.

Table 8-3 shows the supply of AHP graduates in 2017 and the MOH employment trend from the year 2017 to 2018. That data illustrates a few of the graduates gained employment in the year after their graduation, as shown by the relatively small increases (or by a decrease) in the number of those employed by MOH. (Note: this data is a broad estimation that does not account for those leaving the service).

Table 8-3: Supply of AHP Graduates in the Year 2017 and the Employment Trend from Year 2017 to 2018 in MOH

Professionals		No. of AHP Graduates	Employment in MOH by Year	
		2017	2017	2018
Clinical Group	Audiologist	49	173	190
	Clinical Psychologist + Counsellor	794	174	178
	DR+RT(Officer)*	NA	160	160
	Diagnostic Radiographer	426	2479	2490
	Radiation Therapist	29	210	257
	Dietitian	286	409	409
	Food Service Officer	445	355	353
	Medical Physicist	37	220	213
	Medical Social Worker	426	252	251
	Medical Record Officer	80	423	459
	Occupational Therapist	241	1287	1305
	Optometrist	201	280	291
	Physiotherapist	851	1536	1531
	Speech-Language Therapist	25	120	132
Laboratory Group	Biochemist	162	449	449
	Biomedical Scientist	920	77	82
	Dental Technologist	68	941	915
	Embryologist**	NA	11	11
	Forensic Scientist	92	41	40
	Medical Geneticist	50	19	19
	Medical Laboratory Technologist	525	6342	6404
Public Health Group	Microbiologist	139	374	375
	Entomologist	52	118	118
	Environmental Health Officer	350	4932	5061
	Health Education Officer**	NA	216	222
	Nutritionist	150	418	419

Source : Maklumat Kedudukan Perjawatan (Human Resource Post Information) MOH (2017-2018)
*Note: * combination of Diagnostic Radiographer and Radiation Therapist with degree qualification*
*** Data not available because multiple qualification entry*
Data provided by Diagnostic Radiographer, Environmental Health Officer, Food Service Officer, Medical Record Officer, Occupational Therapist, Physiotherapist and Radiation Therapist include both officer and assistant.

8.1 Extracts from 11th Malaysia Plan 2016-2020 Concerning Advanced AHP Training

The Specialty and Subspecialty Framework of Ministry of Health Hospitals under the 11th Malaysia Plan (2016-2020) includes the following comments and identifying needs. These extracts are included here to reinforce that AHP specialisation is a strategy of interest to other clinicians and to demonstrate that they form important members of interdisciplinary teams. Thus, training plan for AHP should focus on these areas in the coming years.

"More funds should be made available for training especially for the allied health personnel. Also funding for short term training overseas have to be given for team training for new services that are planned which will include both doctors as well as allied health personnel. Allied health personnel to run the dedicated wound care unit, endovascular unit and vascular laboratories." "Lack of career pathway for support services in the subspecialty areas is major gaps/ issues/ challenges of allied health staffs in MOH"

AHP REGISTRATION AND PRACTICE CERTIFICATION

9. AHP Registration and Practice Certification

On 4th February 2016, the new Allied Health Professions Act 2016 (AHPA) received Royal assent and then gazette on 18th February 2016. The primary purpose of the Act is to regulate the registration and practice of the allied health professions in Malaysia. A Malaysian Allied Health Professions Council (MAHPC) will be established to regulate the allied health professions.

The key purpose of the act is to protect the public interest through regulating the professional standards of training, practice, professional skills, conduct and ethics of registered allied health professionals in Malaysia. The Malaysian Allied Health Professions Council (MAHPC) under this act will govern and regulate the registration of persons practising as allied health practitioners and persons carrying on activities relating to allied health.

In Malaysia, there are more than 30 categories of AHP and only 23 types of allied health professions listed in this act. While, some professions and related activities are regulated by other acts (Table 9-1). However, there are also a group of practitioners doing work or activities related to allied health without any regulation.

Table 9-1: Allied Health Professionals, Related Act and Governing Bodies

Legislation	Governing Body	Allied Health Professionals
Optical Act 1991	Malaysian Optical Council	Optometrist & Optician
Counsellor Act 1998	Board of Counsellors	Counsellor
Food Analysis Act	Malaysian Food Analysts Council	Food Analyst
Dental Act 2018 (not enforced yet)	Malaysian Dental Therapist Board	Dental Therapist
Allied Health Professions Act 2016	Malaysian Allied Health Professions Council	• Audiologist • Clinical Psychologist • Clinical Scientist (Biochemist) • Clinical Scientist (Biomedical) • Clinical Scientist (Embryologist) • Clinical Scientist (Medical Geneticist) • Clinical Scientist (Microbiologist) • Dental Technologist • Diagnostic Radiographer • Dietitian • Entomologist (Public Health) • Environmental Health Officer • Forensic Science Officer • Food Service Officer (Healthcare) • Health Education Officer • Medical Laboratory Technologist • Medical Physicist • Medical Social Worker • Nutritionist • Occupational Therapist • Physiotherapist • Radiation Therapist • Speech- Language Therapist
No Act	• Pharmaceutical Services, MOH • Food Safety and Quality Division, MOH	• Pharmacy Assistant • Food Technologist

Source: Allied Health Sciences Division, MOH

9.1. Registration, Licensure and Certification of the Allied Health Professions

To qualify for registration in Malaysia, one must have a recognised qualification and have not been convicted of an offence involving fraud, dishonesty or an offence punishable with imprisonment for more than two years. Besides, the Council may also determine other prerequisite requirements that need to be fulfilled as part of the registration process.

The national registration system proposed in the Allied Health Professions Act 2016 includes a list of 23 professions as in the Second Schedule. After registration, a practitioner shall also apply to the MAHPC for a practising certificate which will specify the address of the practitioner's principal place of practice and all other places of practice. The practising certificate shall be valid for two (2) years, and renewal is subjected to an assessment of competency. As the doctors, pharmacists and dentists have formalised, and now once AHP act is enforced, Continuous Professional Development (CPD) points may become a requirement in the renewal of Practicing Certificate. AHP can attain a certain number of CPD credits points each year via formal courses and various professional activities. Specific guidelines for each profession are currently being developed with representatives from professions.

Even though the national registration system is suggesting registration of all professions in Second Schedule, Allied Health Professions Act 2016, there is a need for further evaluation of the risk to the public against the cost involved in developing registration and licensing system. Benchmarking with countries like Singapore, Australia or Canada is recommended for further improvement.

9.2. The Institutional Framework for Licensing and Registration

Currently, the regulation for AHP Act is still under the review of Attorney General Chamber Office, Malaysia. A Pro-Term Council representing 23 professions has been established to assist AHSD in preparing the enforcement of the act of December 2019 and registration in the first half of 2020. The registration of the practitioners shall commence once the Council is formed.
At the initial stage, five (5) committees have been appointed to facilitate the ministry to determine registration requirements, the scope of practice, disciplinary and ethics, education and training standards and requirements for expert registration. The proposal from these committees will be presented to Council members for endorsement.

In order to maintain the practising certificate, CPD will be incorporated as part of the requirement in the regulatory framework. Therefore, all renewals of practising licenses need to produce evidence of participation in CPD activities according to the Council. This will ensure the registered practitioners will continually maintain competency to provide safe, high-quality service and keep abreast with current developments.

9.3. The Role of Professional Associations and other Stakeholders in Setting and Maintaining Quality Standards

At this stage, the professional associations are representing professions in the committees and technical working groups to establish requirements for the implementation of Act 774.

They play an important role in the development of accreditation standards for the Malaysian Qualifying Agency for allied health professionals training. Empowerment of the professionals' body is essential to maintain high practice standard among the practitioners once Act 774 is enforced. The associations and other stakeholders play an important role in continuing professional development through the provision of learning opportunities for students, graduates and people already working. Networks through professional association to meet and discuss their field of expertise is also anticipated.

9.4. Registration of AHPs Alignment with other ASEAN Nations

At present, Malaysia is focusing on the local regulatory framework to ensure the Allied Health Professions listed in the Second Schedule to be regulated before engaging in the ASEAN Framework Agreement on Services. Currently, the Malaysian practitioner who wishes to provide services out of the country is required to comply with the requirements set by the local authorities in the respective countries.

RECOMMENDATIONS

10. Recommendations

In many countries the AHP are dynamic in response to needs, social influence and funding streams. The allied health services are recognised as an important entity in the multidisciplinary approach in community, primary care, public health and hospital care. They play vital role in enhancing person-centric and population health through service provision from wellness, prevention, curative and rehabilitative care.

This technical report will serve as the reference for AHSD and AHP to determine directions and action plan to support overall health services along with allied health professional's development in Ministry of Malaysia (MOH). It will help ensure clarity of strategic direction, co-ordinated policy making and planning, cross professional collaboration and effective clinical governance for all allied health services in healthcare.

It is clear that healthcare is facing growing pressure to strengthen the provision of health services and, at the same time, face with increasing costs, workforce shortage, and need to upgrade facilities to meet rapidly evolving health technologies and emerging healthcare needs. On the other hand, health care providers are blitzed with an increasing burden of non-communicable diseases, infectious disease emergence and re-emergence, ageing populations, and rising mental health challenges. As we face rising health related issues and challenges as described in Chapter 3, this WHO consultancy report makes the following recommendations:

a. For the effective regulation of practitioners from the 23 allied healthcare professions specified in Second Schedule Act 774, an effective regulatory framework for allied health professionals in Malaysia needs to be established by considering their different qualifications, training, practice standards and competencies.

b. Since the majority of AHPs in Malaysia are in clinical settings, and there are relatively few public health professions, a shift is required to provide greater community access to AHP for community-based care, while continuing to supplement existing secondary and tertiary health services in response to the new norm.

- Reorient allied health service delivery away from hospital-centric acute care to a model that emphasises on the promotion of health, early detection, disease prevention, and effective management of chronic illness through comprehensive PHC and public health programmes in the community settings.
- Collaborate with other healthcare professions and focus on early diagnosis and improve therapeutic services within communities in the area of diseases, mental illness, older people and disabled people needing rehabilitative care, palliative care, laboratory and radiology services. This approach requires the active engagement of AHP in community-based multidisciplinary teams working in population health and well-being model.
- AHP need to initiate ongoing dialogue with other healthcare professions in MOH to form multi-skilled teams to provide continuity of care and rehabilitation in the community beyond hospital care. A multi-skilled/multi-tasking team approaches by realigning the AHP roles in healthcare offer some potential to meet increasing demand and contain costs and open opportunities for collaboration via a public-private partnership.

c. In view of changes in health knowledge and technology, increase service demand, need for AHP expertise in specialised fields, and yet slow career development; there is a need to develop a comprehensive framework of credentialing, competency, and capability linked with training need and allied health professions' career development.

d. AHP are urged to involve in health research and align research activities according to National Research Priorities for enhanced research funding from MOH or other agencies. Research is

needed to make AHP contribution more visible in the population health, the clinical efficacy and cost effectiveness of working in interdisciplinary/ multidisciplinary, collaborative care models and other alternative modes of delivery. The research evidence become basis for translating research output into policies which enable reform of AHP service structures including, staffing targets/norms for AHP at different service levels or settings and advocacy for resources.

e. The proliferation of training schools, large numbers of AHP graduates, few public sector vacancies, and the standardisation of curriculum design for MQA accreditation are among the issues related to training and employment of AHP. Continued strategic cooperation between the MOH and MOHE will lead to improved postgraduate training, enhanced curriculum quality, and reliable job opportunities.

f. Timely and dynamic information including AHP service related data and human resources are essential for AHP's growth in the country. Therefore, it is important to establish an AHP management information system with the capacity to produce relevant reports for the planning and management of AHP.

In short, in order to address the issues and challenges facing AHP, it is important to realign direction and health policies with a focus on key areas such as enhancement of allied health services, strengthening human resources, resource optimization, establishment AHP governance, development of strategies to harness technology and embrace digital transformation to provide seamless integrated world-class healthcare. To achieve this, during a period of limited public sector growth will require a transition policy that focuses on processes that look towards outreach rather than centralisation and technology driven initiatives. This shift may not be limited to existing professions and services and will necessarily involve retraining and supervision. A comprehensive strategic plan together with monitoring and evaluation mapping shall be established to ensure these recommendations will achieve its objectives to strengthen and invigorate the AHP to move the nation's healthcare forward.

CONCLUSION

11. Conclusion

This report presents a detailed profile of the Allied Health Professions in the Ministry of Health Malaysia that was not previously available. This new information allows for consideration of the role of AHP in the strategic reform of the Malaysian health system. The weight of emerging health and demographic issues mandates a reform of the health system away from over-reliance on acute services to increasing activity in the community and primary health care levels. Concurrently, Malaysia has the opportunity to consider how AHP could be managed more effectively in clinical and public health settings, with integrated professional teams producing care options along the full continuum of care from early diagnosis and intervention to rehabilitation and palliative care.

This consultation that is initiated by the Allied Health Sciences Division, Ministry of Health and supported by WHO represents a significant development in the process of implementing the Allied Health Professions Act 774. It is highlighting the important need for continuing dialogue between the Ministries and other agencies or stakeholders to produce and govern the AHP that Malaysia will need in the future. This report, therefore, represents the beginning of developments that will provide greater visibility to the AHP and awareness of their roles and contributions towards initiation of actions and dialogue that are needed to consolidate AHP contribution in the changing provision of health care in Malaysia. It should be stressed, however, that this report must be regarded as work in progress rather than definitive. It is noted, that in the absence of a cohesive data system some data on AHP is incomplete or inconsistent, that not enough is known about the utilisation of services provided by the AHP and the workload they experiencing and most importantly, that at this stage the fast growing private sector that employs huge number of the AHP workforce is not included in the analysis.

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