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Labour market analysis for the health sector of Ghana

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LABOUR MARKET ANALYSIS FOR **THE HEALTH SECTOR OF GHANA**

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The Ministry of Health (MoH) is committed to achieving universal health coverage (UHC) and the other health related targets of the United Nations Sustainable Development Goals (SDG3) by 2030. It is therefore imperative to provide the health system with adequate health workers who are equitably distributed with the requisite skills mix and highly motivated to drive this course. As part of this commitment, MoH undertook this comprehensive health labour market analysis (HLMA) with support from the World Health Organization (WHO). This laid an evidence base for responsive and proactive policy and strategic interventions.

This work would not have been possible without the contribution of various organisations and individuals. We wish to express our profound gratitude to the WHO Country Office in Ghana, the WHO Regional Office for Africa and WHO headquarters for providing technical expertise and financial assistance throughout the development of this HLMA. Our thanks also go to the United Kingdom Department of Health and Social Care for their generous contribution.

We would also like to acknowledge the contribution and participation of government institutions, development partners, quasi-governmental institutions, private health institutions, and heads of agencies of MoH.

Finally, we extend our gratitude to the HRH Steering Committee and the Technical Working Group (TWG) members who worked tirelessly throughout this process during the methodology, data collection, analysis and consolidation of this comprehensive health labour market analysis (HLMA) of the Ghana health workforce.

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ABBREVIATIONS

AFRO : WHO Regional Office for Africa

AHPC : Allied Health Professions Council

AIDS: Acquired Immune deficiency Syndrome

CAGD: Controller and Accountant–General Department

CCN: Critical care nurse

CHPS: Community-based health planning and services

CHAG: Christian Health Association of Ghana

COHO: Community oral health officer

COVID-19: Corona Virus Disease, 2019

CSO: Civil society organizations

CU: Catholic University

DALYs: Disability-adjusted life years

EDA: External development assistance

ENT: Ear, nose and throat

FWSC: Fair wages and salaries commission

GAQHI: Ghana Association of Quasi-Government Health Institutions

GCPS: Ghana College of Physicians and Surgeons

GDP: Gross domestic product

GGHE: General government health expenditure

GSS: Ghana Statistical Service

GTEC: Ghana Tertiary Education Commission

HeFRA: Health Facilities Regulatory Agency

HIV: Human immunodeficiency virus

HLMA: Health labour market analysis

HR: Human resources

HRDD: Human Resources Development Directorate

HRH: Human resource for health

HTIs: Health training institutions

HW: Health worker

HWF: Health workforce

ISCO: International standard classification of occupations

JICA: Japan International Cooperation Agency

KNUST: Kwame Nkrumah University of Science and Technology

KOICA : Korea International Cooperation Agency

MDA: Ministries, departments and agencies

MDC: Medical and Dental Council

MDG: Millennium Development Goals

MoE: Ministry of Education

MoF: Ministry of Finance

MoFFA: Mortuary Facilities and Funeral Agency

MoH: Ministry of Health

MTEF: Medium-term expenditure framework

NAC: Nurse assistant clinical

NAP: Nurse assistant preventive

NGOs: Nongovernmental organizations

NHWA: National health workforce account

NLC: National Labour Commission

NMC: Nursing and Midwifery Council

NP: Nurse practitioner

OPN: Ophthalmic nurse

PharmC: Pharmacy Council

PHFAoG: Private Health Facilities Association of Ghana

PHN: Public health nurse

PON: Perioperative nurse

PRB: Professional regulatory body

PSC: Public Services Commission

SDA: Service delivery agency

SDG: Sustainable Development Goals

SSL: Support and safeguard list

SSSS: Single spine salary structure

TAMC: Traditional and Alternative Medicine Practice Council

TC: Technical clearance

UHC: Universal health coverage

UK: United Kingdom

USA: United States of America

USAID : United States Agency for International Development

USD: United States dollar

UN: United Nations

WACPS : West Africa College of Physicians and Surgeons

WHO: World Health Organization

WISN: workload indicator of staffing needs

GLOSSARY

Demand (for health services): The health care expectations expressed by individuals or communities; or, the willingness and ability to seek, use, and, in some settings, pay for services. It may be subdivided into expressed demand (equated with use) and potential demand. It may also be subdivided into rational demand (demand that corresponds to need) and irrational demand (demand that does not correspond to need).

Demand (for health workers): The demand for health workers corresponds to the number of health workers that a health system can support in terms of positions or economic demand for services. In other words, it reflects the capacity and willingness to pay the purchasers of health care (for example, the government or private sector firms), which in turn drives the demand for employing health workers in public or private hospitals, public health centres and other parts of the health system, including self-employed health workers. The demand for health workers is therefore a derived demand for health services.

Dual practice: There are several forms of dual practice. Health professionals can work in a public service provision role and another role: (a) outside: in a completely separate private environment; (b) beside: in a private ward or clinic physically associated with a public facility, but run as a separate business; (c) within: where private services are offered inside a public facility, but outside public service operating hours or space; or (d) integrated: where additional fees are charged for services offered, often informally, alongside standard public ones on the understanding that service will be faster- or of higher quality. Academics and policymakers typically restrict the term "dual practice" to category (a), but it is clear that categories (b), (c) and (d) present alternative scenarios for health professionals to combine public and private practice and supplement public sector salaries. Policy-making in this domain should navigate the trade-offs between the objective of retaining personnel and ensuring their commitment to public sector objectives.

Education (of health workers): The process of developing knowledge, skills, attitudes and competencies related to the delivery of health services. Specialization is the process of developing advanced knowledge, skills, attitudes, and competencies related to the delivery of specific health services.

Employment status: full time, part-time, temporary, permanent: Full time (whole-time) is employment or working for the amount of time considered customary or standard. Part-time is employment or working for less than the amount of time considered customary or standard. Permanent is employment contracted for an indeterminate period. Fixed-term is employment contracted for a fixed period. Temporary refers to short-term contracts or "casual" work, either for a definite period or for a specific activity. Self-employment is when remuneration is directly dependent upon the profits derived from the goods and services produced by the individual.

Health labour market: The structure that allows services of health workers to be sought (demanded) and offered (supplied). The health labour market can be characterized according to geographical area (local, national or international); occupation (by occupational title or category, specialized or unspecialized); and sector (private or public, formal or informal).

The dynamic between the number and kind of jobs offered on the market and the number of health workers is central in determining the configuration of the health labour market.

Health workforce, human resources for health, health workers: all persons engaged in actions whose primary intent is to enhance health. Three distinct categories of workers are relevant to our health workforce analysis: (a) those with health vocational education and training, working in the health services industry; (b) those with training in a non-health field (or with no formal training) working in the health services industry; and (c) those with health training who are either working in a non-health care related industry or who are currently unemployed.

Health workforce planning: The process of estimating potential requirements for human resources for health and designing ways of fulfilling those requirements, including strategies that address the adequacy of the supply and distribution of the health workforce according to policy objectives and the consequential demand for health labour.

International standard classification of occupations (ISCO): An international classification for organizing jobs into a clearly defined set of groups according to the tasks and duties undertaken in the job. It is maintained by the International Labour Organization.

Mismatch: A discrepancy or a lack of correspondence between demand and supply that can result in (a) health worker shortage or surplus, (b) skills mismatch related to under education or over education, or (c) labour discrimination or bias exercised by the employer.

National health workforce accounts (NHWA): A mechanism to collate and use a set of standardized indicators to generate reliable human resources for health information and evidence, to enable planning, implementation and monitoring of workforce policies towards universal health coverage and improving comparability of health workforce data nationally and globally.

Occupation: A set of jobs whose main tasks and duties are characterized by a high degree of similarity.

Out of the labour force: Individuals who are neither employed nor unemployed and who are not looking for a job.

Productivity (technical efficiency): The outputs extracted from given inputs, such as patients seen per doctor or number of procedures per provider.

Stakeholder: An individual, group or organization that has an interest in the organization and delivery of health care.

Stock: The total number of health workers potentially available in a country, including those participating in the health labour market, plus those who are qualified to do so but do not participate for some reason, such as early retirement.

Supply (of health workers): The number of health workers active in the health labour market, either who are in employment or not employed but willing to work.

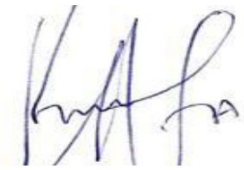
Surplus (of health workers): The situation in which there are more qualified health workers willing to work than there are jobs readily available to employ them.

PREAMBLE

The health sector in Ghana plays a crucial role in improving and maintaining the overall well-being of the people living in the country. The sector requires an adequate level of qualified health professionals and other allied personnel to deliver this mandate. As such, understanding the labour market dynamics within this sector is essential for effective planning and policy-making for the provision and effective management of health operations.

The health labour market analysis (HLMA) for the health sector of Ghana focuses on various aspects including the supply and demand for health workers, the distribution of health workforce across different regions, the skills mix and competencies of health professionals, as well as the factors influencing their education and training, recruitment, retention, and motivation. It also provides the opportunity for the Ministry of Health (MoH) to work with its internal stakeholders (WHO Ghana, MoH agencies, health professional associations, quasi-governmental health institutions, and private health sector) and external stakeholders (WHO AFRO, WHO headquarters, Ministry of Education, Ministry of Employment and Labour Relations) to gather and analyse data on the health workforce in the country. By examining these key factors, we can gain valuable insights into the current state of the health workforce in Ghana and identify areas for improvement. This information will be invaluable for policymakers, health care providers, and other stakeholders in the sector to develop strategies that will ensure a well-functioning and sustainable health workforce.

This HLMA for the health sector of Ghana is a critical step towards strengthening the health care system and ultimately improving the health outcomes of the population. We hope that the findings and recommendations from this analysis will inform evidence-based decision-making and contribute to the overall development of the health sector in Ghana.



KWABENA MINTAH AKANDOH (MP)

Minister of Health

EXECUTIVE SUMMARY

BACKGROUND

Ghana's health system, which is premised on primary health service delivery, aims to ensure a healthy and productive population that reproduces itself safely. The sector seeks to reduce inequities in the overall health status of Ghanaians, improve access to quality, efficient, and seamless health services and ultimately attain UHC by improving the coverage of health services across the country.

The country has made significant progress in improving access to health services, as demonstrated by the increase in the health workforce, particularly doctors and nurses. The health workforce density improved from 1 per 10 000 population in 2005 to 1 per 5707 population by the end of 2022 in line with national objectives. The nurse-to-population ratio also improved from 1 per 799 in 2017 to 1 per 530 in 2022. To further enhance access to health care and address existing challenges, the MoH of Ghana developed a National Health Policy (2020-2030).

However, access to health care is still constrained by health workforce shortages in certain geographical locations.

Concerns regarding the productivity of health workers in health facilities have been raised on several occasions. Furthermore, the Ghana health sector is affected by high unemployment of qualified health workers and increasing attrition levels which have had an effect on workload distribution and strained the remaining health workers. To generate evidence of the possible labour market mismatches and better understand the dynamics affecting it, Ghana in 2023 adopted a health labour market analysis (HLMA).

The HLMA provides a comprehensive overview of the health labour market, offers guidance on how to analyse and understand its dynamics, and facilitates the development of policies addressing key challenges identified by the HLMA. This study was conducted with the understanding that the health labour market, like any market, is dynamic and influenced by policy decisions and actions across several sectors, including health, education, labour market, finance and foreign relations. Also, the health labour market is influenced by the actions of stakeholders including development partners.

This report presents a comprehensive HLMA of the Ghana health workforce. The main objective of the study was to conduct an in-depth analysis of the relationship between supply, demand and need for the health workforce in Ghana and facilitate the development of policies addressing the key challenges identified. The specific objectives of the analysis were to:

01 dynamics of supply and demand of health labour in Ghana;

02 develop a predictive normative need of the health labour force to address the disease burden/ workload in Ghana;

03 inform policy recommendations with regards to the production, net migration, distribution and productivity, and regulation of the health workforce in Ghana;

SCOPE AND METHODOLOGY

The analysis adopted the technical approaches recommended in various WHO normative, global, and regional studies. Comprehensive approaches utilizing multiple complementary methodologies were adopted to gather data and analyse the health workforce situation and labour market dynamics in Ghana. The HLMA involved three core areas to derive an understanding of the past, present, and future health workforce circumstances, both in the public and private sectors. These involved descriptive, predictive, and exploratory labour market analyses. Field surveys were conducted using adapted WHO tools to collect primary and secondary data from health workers in Ghana's public and private sectors, training institutions, and regulatory and health administrative bodies following approval from MoH. The questionnaires explored the 69 staff categories of health workers prioritized in the research.

SUMMARY OF FINDINGS

Stock and supply of health workers: Ghana had an overall stock of about 298 382 qualified health workers across 69 health workforce categories in 2022. Out of the total stock, 99% (294 389) of health workers were actively participating in the labour market. About 58.6% (172 630) were employed in the public sector, 1.1% (3271) in the private sector, and an estimated 40.3% (118 488) of qualified health workers were reported to be unemployed.

Distribution of the health workforce by staff category: Out of the total stock, nursing and midwifery professionals constituted approximately 50.8% (151 636), doctors 3.1% (9347), pharmacists 2.8% (8375), medical laboratory workforce 1.4% (4227) and associate nurses (community health nurses and enrolled nurses) 32.3% (96 339). This relatively high proportion of nurses in the health workforce is in line with the country's strong emphasis on nursing as core to the country's primary health service delivery and recognition of the importance of nursing professionals in the health care system. However, the percentages for doctors (3.1%), pharmacists (2.8%), and medical laboratory workers (1.4%) appear relatively low in comparison. This raises concerns about the availability of medical doctors, pharmacists, and laboratory professionals in proportion to the overall health care needs of the population.

Distribution of health workforce by subcategory:

nurses: The total nursing workforce stock of 151 636 was made up of:

registered general nurses:
78 735 (51.9%);

midwifes:
40 700 (26.9%);

and specialized nurses (postgraduate and post-basic trained):
32 201 (21.2%)

nurse associates: The 96 339 stock of nurse associates consisted of:

community health nurses:

40 663 (42.2%);

enrolled nurses:

55 676 (57.8%);

pharmacists: The pharmacy workforce was 8375, consisting of:

pharmacists:

5658 (67.6%)

pharmacy Technicians:

2717 (32.4%)

doctors: The 9347 stock of doctors was made up of:

specialists:

5664 (60.6%);

generalist medical practitioners:

3481 (37.2%);

and dentists:

202 (2.2%).

prioritized allied health professionals: The 9823 allied health workforce consisted of:

medical laboratory scientists:

4227 (43.0%);

disease control professionals:

3920 (39.9%);

and optometrists and opticians:

1676 (17.1%).

Unemployment rate among health professionals: About 118 488 health workers were unemployed across the 69 health workforce categories, constituting an unemployment rate of 40.3%. The unemployed health workers included 105 512 nursing staff, 336 medical doctors, 5069 Pharmacy staff and 2247 laboratory personnel.

Gender and age distribution of health workers: About 76.5% of the health workforce were female and the remaining 24.5% male.

The average age of male health professionals across key occupational groups was approximately 40 years compared to an average of 35 years for their female counterparts.

Geographic distribution of health workers: equity implications: Approximately 38% of the active health workforce worked in rural areas, 35% worked in urban areas and the remaining 26% were in semi-urban areas. According to available data, 58.62% of Ghana's population resided in urban areas while the remaining 41.38% resided in rural areas.

Trends in the density of health workforce: The number of employed health workers in the public sector tripled between 2013 and 2022, with an annual increase of 31.3%. This increased from 16.56 to 41.92 per 10 000 population, representing a 2.5% improvement in the density of health workers. Ghana's aggregate workforce density of doctors, nurses, and midwives, including those not yet employed was 82.75 per 10 000 population, exceeding the 2006 thresholds of 22.8 required to achieve 80% skilled birth attendance, indicating good prospects for achieving universal health coverage (UHC) and other health objectives.

Demand for health workforce: The health sector (MoH, quasi-governmental and private) had a total of 468 236 established posts (indicative demand) out of which 226 667 (48.41%) had budgetary provision in 2022 to be filled (effective demand). Of the funded posts or effective demand, the met demand was 224 059 (98.87%) and the unmet demand was 2546 (1.13%).

Migration intentions of health workforce: About 63% of the health workforce had intentions to migrate in the future, among whom 38% had started working on their migration intention. About 26% intended to migrate within the next one or two years, 26% intended to migrate within three to five years, 7% would want to migrate in seven years while 34% were unsure when they would migrate. In addition, the number of nurses seeking verification of good standing to migrate increased from 2678 in 2020 to 6208 in 2022, representing a 232% increase in two years. At least, 5077 nurses sought verification to migrate between January and July 2023.

Income and wage expectations of Ghana health workers: The average self-reported current income of health workers was approximately 2813 Ghana cedis while their reservation wage was 3000 cedis.

The health workers were on average earning 187 cedis less than their reservation wage. The transfer wage was found to be 5000 cedis, resulting in a potential retention gap of 2187 cedis. The average migration wage to regional and international destinations was reported to be 10 000 cedis.

Income comparison of public and private sector health workers: Generally, the public sector offers more attractive remuneration to health workers than the private sector. For example, a medical doctor in the public sector earns an annual income of 121 621 Ghana cedis, which is 47% higher than their private sector counterparts who earn about 64 125 cedis annually. Also, medical specialists have significantly higher earnings in the public sector, with an annual income of around 151 491.10 cedis, as compared to 100 347 cedis in the private sector. This is roughly 51% higher for the public sector worker. Dental surgeons and medical physicists earn about 32.6% more in the public sector than in the private sector.

Projected need for health workforce: To meet at least 98% of the disease burden and aim for a minimum of 80% UHC targets, factoring in population size, demographic shifts, and effective interventions for health needs, Ghana requires about 367 118 health workers, projected to increase to 494 758 by 2030. This, however, widely ranges between 238 875 and 560 477 in 2022, increasing to between 321 817 and 754 805 by 2030 at low and high need scenarios respectively.

Capacity to employ: Ghana's overall budget capacity for workforce employment in 2022 was 127 618 health workers which is anticipated to increase by 8% to 137 407 by 2025. If the economic parameters remain constant, this will increase from a baseline of 16% to 147 763 by 2030. The baseline demand falls significantly short of the 367 118 estimated need.

The demand for medical doctors in Ghana is projected to increase from 7394 in 2022 to 8562 by 2030. That for nurses will range between 55 714 and 68 508, while for pharmacy and pharmaceutical technicians, demand is estimated to be between 14 024 and 16 238 in the same period.

Available fiscal space: At baseline (2022) wages and salaries, the cumulative available financial space for the health workforce was US$ 1096 billion. This was predicted to increase to US$ 1511 billion by 2030, averaging US$ 1508 billion over the period. It was estimated that it would cost Ghana on average US$ 9.791 billion to employ the projected supply between 2022 and 2030 and an average of US$ 9.958 billion to employ the population-based health workforce needed.

Cost of employing predicted supply and population-based need: The percentage of public health sector wages required to absorb unemployed health workers in 2022 was 30.6%, anticipated to increase to 568% by 2030 with a 6292% average over the projected period. The health workforce expenditure was projected to average 1.4% of gross domestic product (GDP) while the supply cost would likely average 7.9% of GDP. In addition, the average cost of population health needs would be 7.9% of GDP.

Cost of training to meet population-based needs: If the country trains a health workforce to meet the population's health needs, it is projected that this would cost an average of US$ 167 million between 2022 and 2030. The total investment required to address population health needs (needs-based employment and training) is projected to average US$ 9765 billion by 2030.

The additional cost of needs and additional supply cost was anticipated to average 6.5% of GDP respectively. It was established that to meet the country's population health needs, Ghana required a HWF financing of US$ 59 per capita in 2022. This would likely increase to US$ 209 per capita spending on HWF by 2030, averaging about US$ 255 per capita during the period.

Section 1:
INTRODUCTION

1.1 CONTEXT

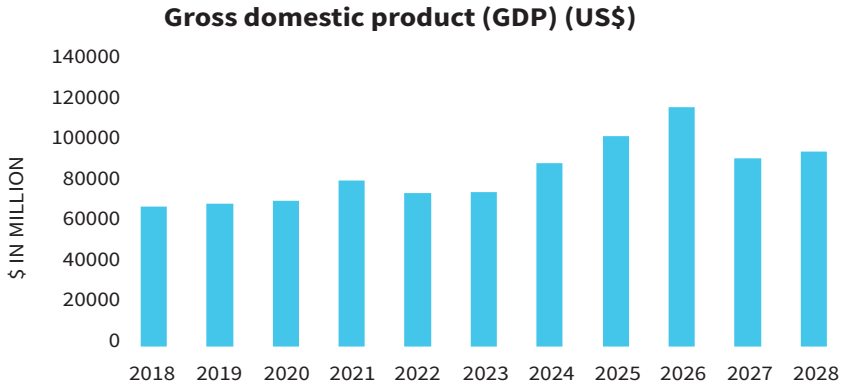
1.1.1 Geographic and socioeconomic information

Ghana is centrally located in the West African subregion and has a total land area of 238 539 square kilometres. It borders Côte d'Ivoire to the west, Burkina Faso to the north, and Togo, to the east. To the south of the country is the Gulf of Guinea. The country is divided into 16 regions with a total of 267 districts.

Ghana is a multilingual country in which about eighty languages are spoken. English, which was inherited from the colonial era, is the official language and lingua franca. The 10 most widely spoken indigenous languages in Ghana are Akan, Ewe, Dagbani, Dangme, Dagaare, Konkomba, Ga, Krache, Gonja and Sisaala (Source: Bureau of Ghana Languages).

There has been an increase in Ghana's GDP in the last five years (2018–2022). In 2022, Ghana's GDP of US$ 73.7 billion was projected to increase to US$ 93 billion by 2028. The GDP per capita in the last five years has averaged US$ 2346.80 and is forecasted to increase to US$ 2373 by 2028. Fig. 1 shows a forecast of GDP from 2018 to 2028 by the Ministry of Finance of Ghana.

Fig. 1: Trend of GDP from 2018 to 2028



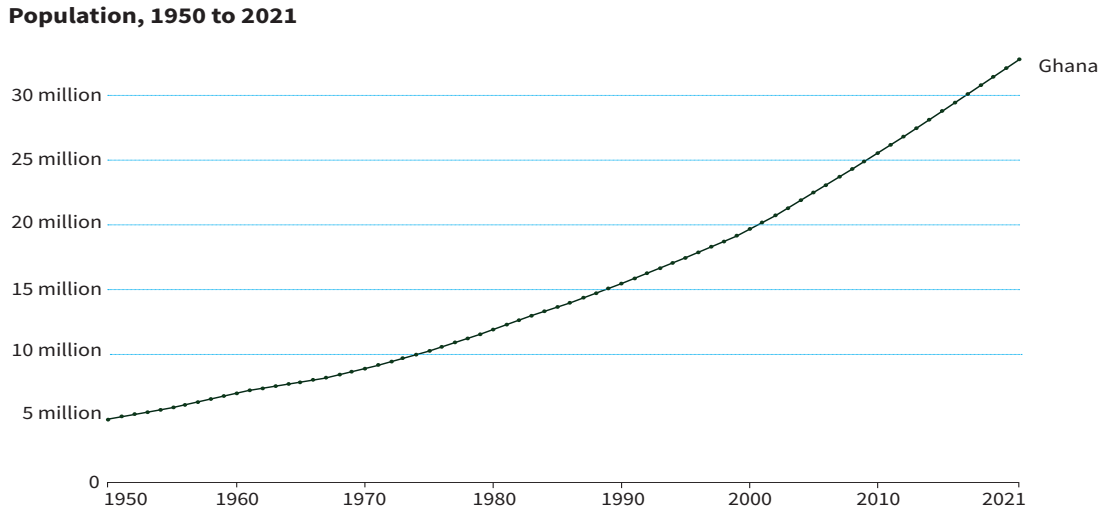
Source: Ministry of Finance Ghana

1.2 DEMOGRAPHY AND HEALTH STATUS

1.2.1 Population size and growth

Ghana's population grew by 572.01% from about 5.08 million in 1950 to 34.12 million in 2023. Fig. 2 shows the population increase in Ghana which is 50.1% female, and 49.9% male. According to available data, 58.62% of Ghanaians reside in urban areas while the remaining 41.38% reside in rural areas.

Fig. 2: Trend of Ghana's population size, 1950–2023



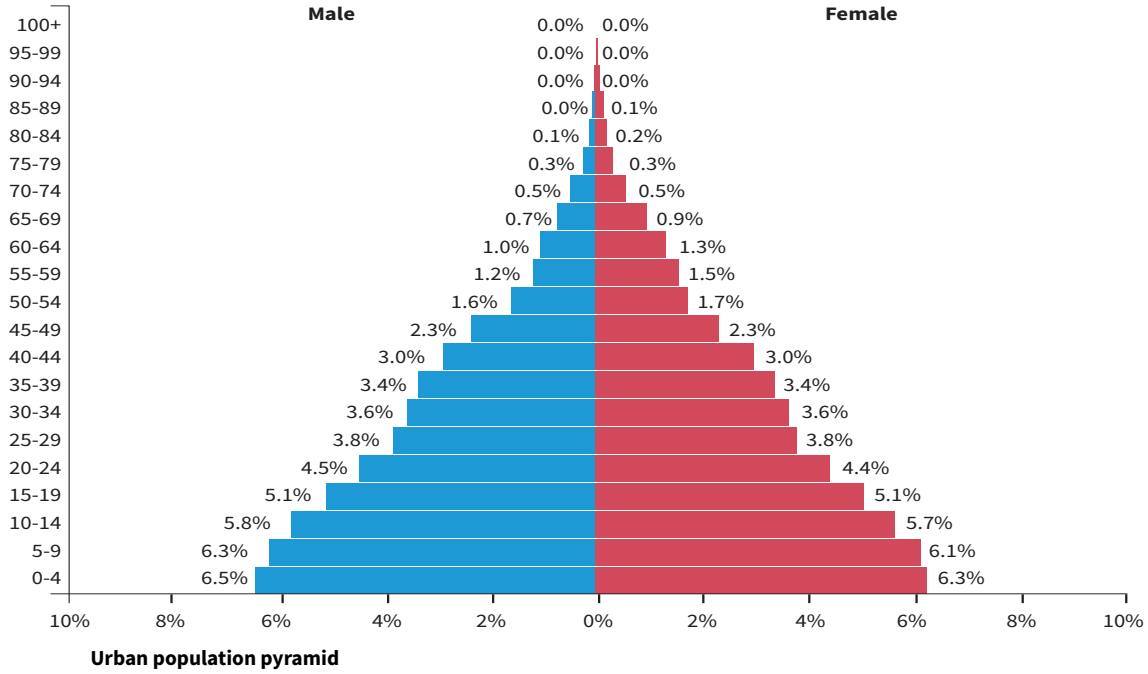
Source: Ministry of Finance Ghana

1.3 AGE STRUCTURE

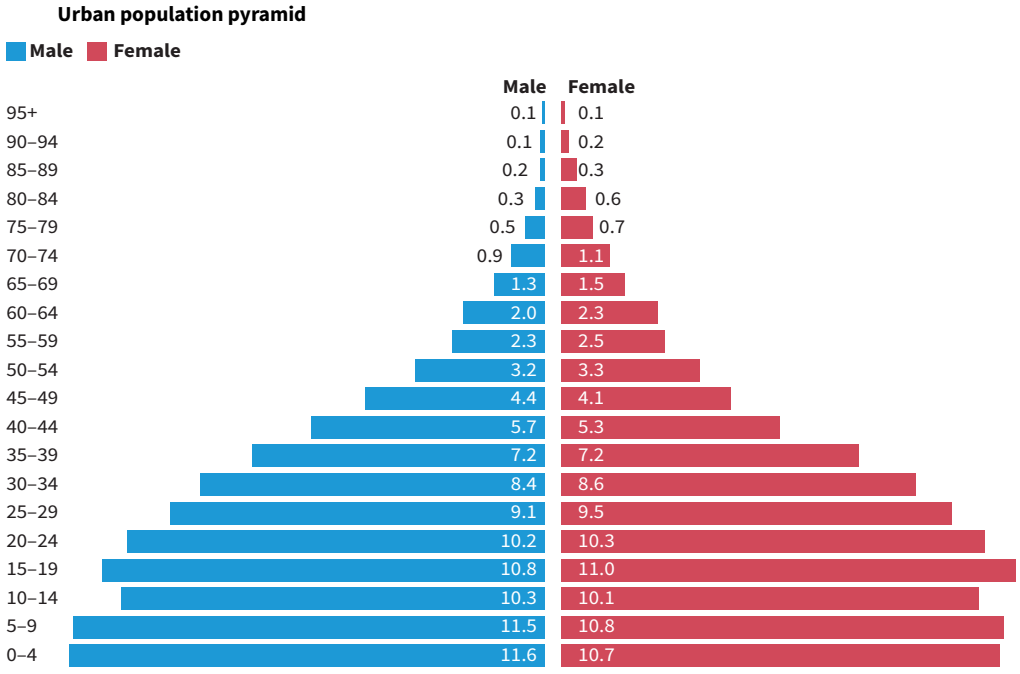
1.3.1 1.2.2.1 Age and sex distribution of the population

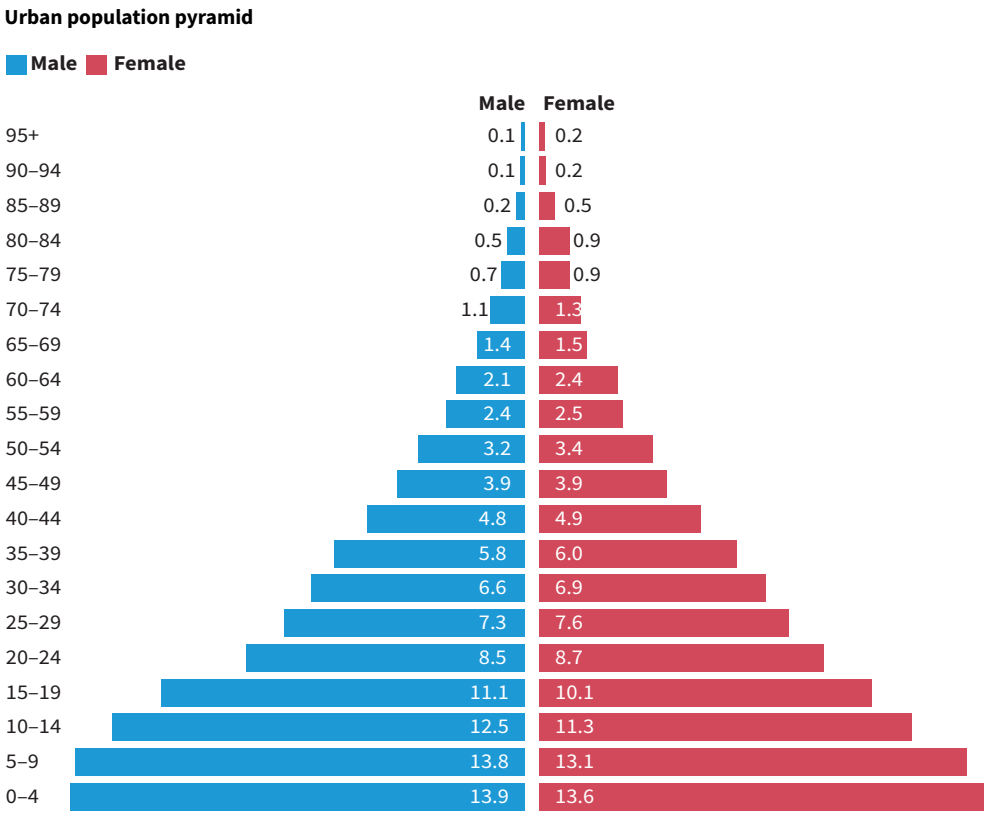
From demographic data, the total number of females (15 631 579) exceeds that of males (15 200 440) by 437 139 (2.8%) nationwide. However, there are more males than females in six (Western North, Western, Ahafo, Oti, Savannah and Bono East) of the 16 regions of Ghana. The variation in the six regions ranges from 5.1% in Western North to 0.5% in Bono East. The male population below 20 years outnumber their female counterparts in all regions, except Greater Accra. The 30–64 year age group (predominantly the working age category) is dominated by males in the Western North, Ahafo and Western regions.

Fig. 3: Age distribution of population by sex



Females outnumber males in urban areas (by 5.0%). In contrast, in rural areas, males outnumber females by 0.3%. Ghana's population age structure is transitioning from one dominated by children (0–14 year olds) to one dominated by young people (15–35 year olds). The proportion of children declined from 41.3% in 2000 to 35.3% in 2021, while that of young people increased from 34.6% in 2000 to 38.2% in 2021. The transitioning of the population from children to young people is evident in all regions and urban areas, especially in Greater Accra where it is most pronounced. In rural areas across all the regions, the transition is yet to occur.

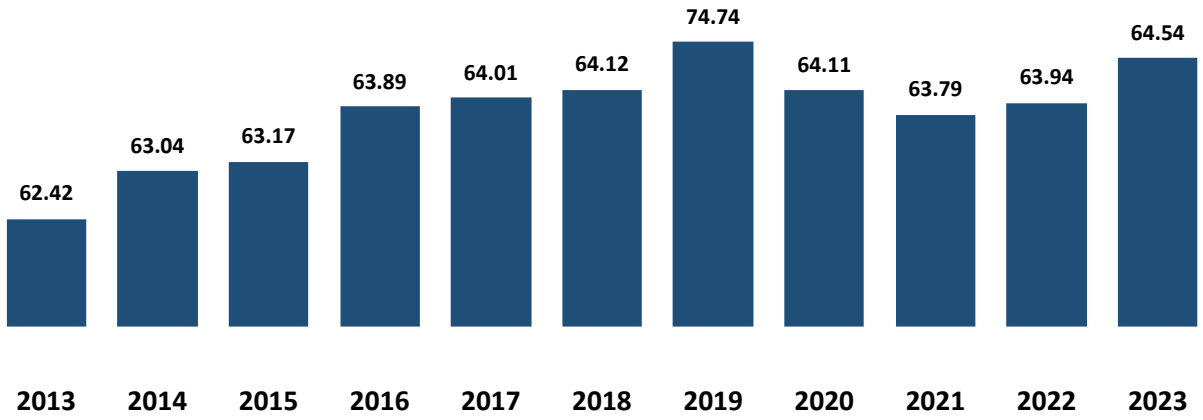




1.4 HEALTH STATUS

The country's health indicators have improved steadily over the years. In 2023, average life expectancy at birth was 64.53 years, which is a 0.83-year increase from the 2021 life expectancy of 63.7. Fig. 4 provides the trend in life expectancy at birth from 2011 to 2023. In the last decade, life expectancy in Ghana increased by 2.11 years. Although data shows a sharp increase of 2.32 years in 2019, there was a drop in life expectancy from 2020 to 2021 which could be attributed to the impact of the COVID-19 pandemic.

Fig. 4: Trend in life expectancy.



Source: World Bank 2023

Table 1: Summary of health status indicators

Indicator	Estimate	Year of estimate
Life expectancy	63.8 years	2021
Neonatal mortality rate (deaths per 1000 live births)	22.8	2020
Infant mortality rate (deaths per 1000 live births)	32.6	2021
Child mortality rate (deaths per 1000 live births)	44	2020
Health expenditure as a share of GDP	4%	2020
Health expenditure per capita	US$ 85	2020
HIV prevalence	1.7 %	2020
Incidence of tuberculosis (cases per 100 000 population)	136	2020
Female obesity prevalence	16.6 %	2020
Male obesity prevalence	4.5 %	2020
Diabetes mellitus	1.4	2013
Deaths due to traffic injury per 100 000	2.9	2013

Source: Ghana burden of disease study (2019) and health (knoema.com)[1]

According to the MoH Ghana burden of disease study conducted in 2019, communicable and noncommunicable diseases as well as neonatal ill health conditions, continue to be high among the population. The disability-adjusted life years (DALYs) burden on the population of Ghana shows that malaria, lower respiratory infections and HIV/AIDS are the top three causes of death in the country. Table 2 provides details on the causes and burden of diseases.

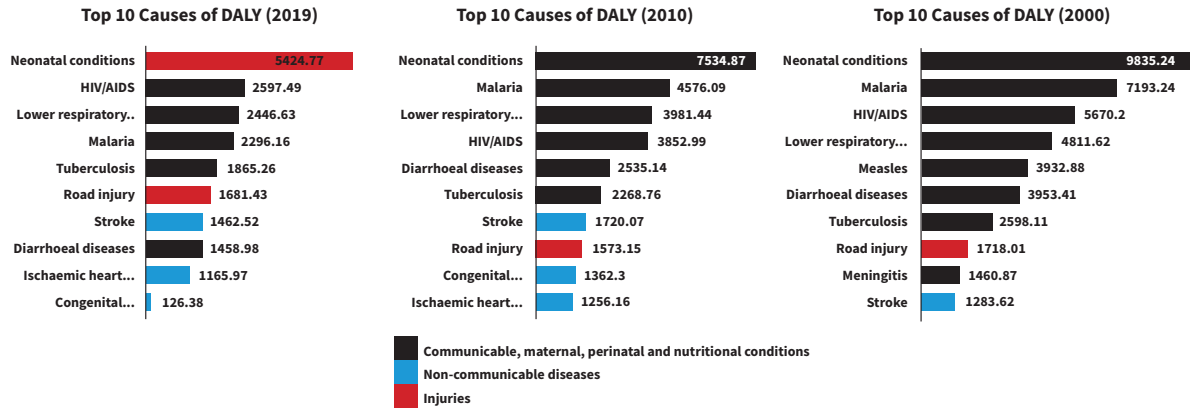
Table 2: Leading causes of death and burden of disease at all ages in Ghana, 2019

Rank	Persons	% total DALYs
1	Malaria	10.9
2	Lower respiratory infections	7.2
3	HIV/AIDS	6.9
4	Neonatal sepsis and other neonatal conditions	5.2
5	Preterm birth complications	4.9
6	Protein-energy malnutrition	4.5
7	Neonatal encephalopathy due to birth asphyxia and trauma	3.9
8	Cerebrovascular disease	3.3
9	Haemoglobinopathies and haemolytic anaemias	3.2
10	Congenital anomalies	2.9

Source: Ghana burden of disease study 2019

For approximately 20 years, communicable, maternal, perinatal, and nutritional conditions have remained the major causes of DALY in Ghana with an average of 84% of the total causes.

Fig. 5: Top 10 causes of DALY in Ghana for both sexes and all ages (2000–2010–2019)



(Source: Global health estimates: Leading causes of DALYs (who.int))

The importance of injuries is growing; their share of DALY causes has doubled over the past 19 years. Also, noncommunicable diseases are progressing faster (from 3% in 2000 to 13% in 2019, which represents an increase of 340% over a 19-year period) and have become a public health issue.

Table 3: Contribution of the Top 10 causes of DALY

		2000	2010	2019
	Injuries	4%	5%	8%
	Noncommunicable diseases	3%	14%	13%
	Communicable, maternal, perinatal, and nutritional conditions	93%	81%	78%

1.4 OVERVIEW OF GHANA'S HEALTH SYSTEM

The health sector in Ghana comprises MoH and its implementing agencies, the private sector, quasi-governmental health institutions and other ministries, departments and agencies that deal with health policies, service delivery, regulation, human resource education and procurement of health services. Additionally, it ensures access to quality health, population and nutrition services for all Ghanaians and promotes the development of the local industry. The sector is one of the most critical for the growth and development of the country in terms of contribution to GDP.

The overall goal of the sector is "to have a healthy and productive population that reproduces itself safely" (MoH, 2020). This will be realized through the following subgoals:

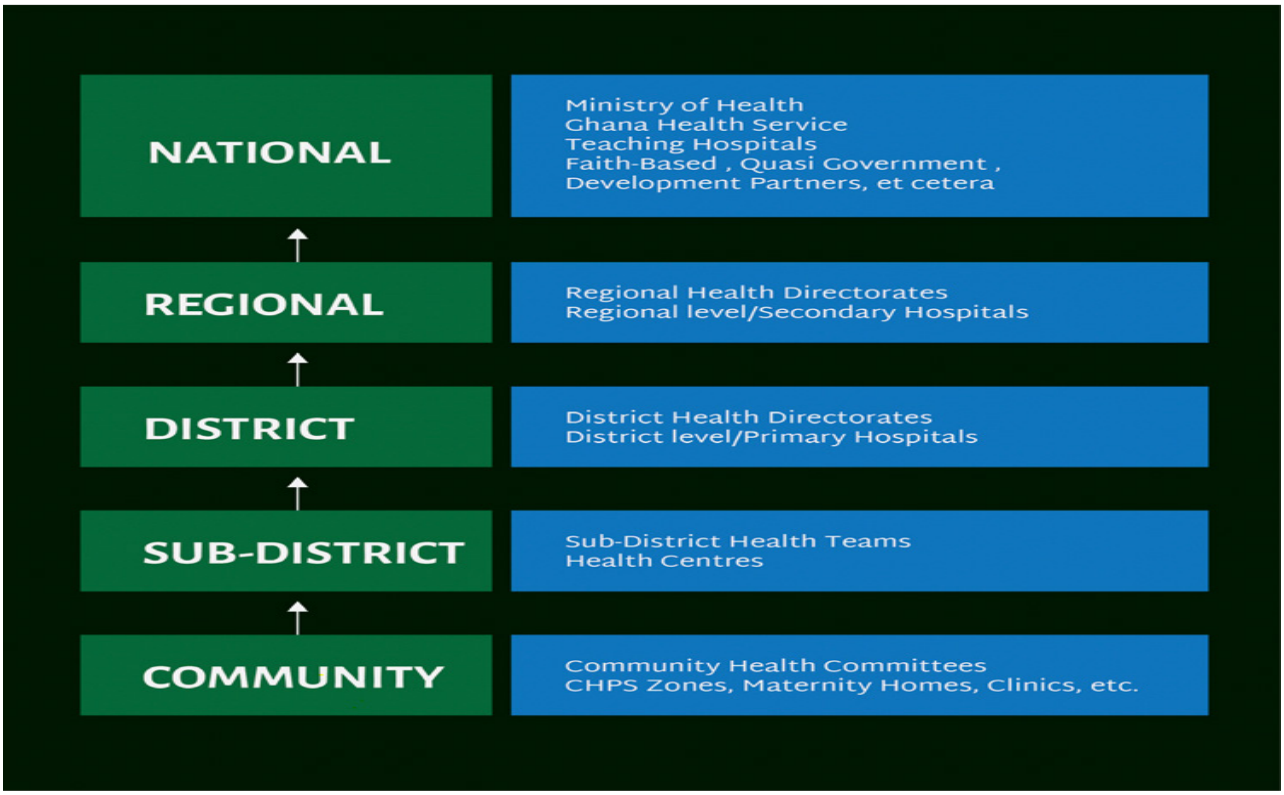
- **reduce inequities in the overall health status of Ghanaians;**
- **improve access to quality, efficient and seamless health services that are gender- and youth-friendly and responsive to the needs of people of all ages in all parts of the country; and**

- **achieve universal health coverage (UHC) through improved coverage of health services (curative, preventive, promotion and rehabilitation) and financial risk protection.**

Good governance and leadership are critical enablers of the health status of every country's population as these relate to how the health system is managed. Although there is no prescriptive approach to the governance of any health sector, the responsibility of maintaining a sound and effective health sector resides with the government through the relevant oversight ministry and its agencies. Ghana's health sector is governed by legislative instruments, passed by parliament, which mandate various regulatory bodies to manage aspects of health delivery.

The private sector is made up of faith-based and private for-profit health institutions, approved and regulated by MoH. Health service delivery in Ghana is organized along community, subdistrict, district, regional and national levels. Leadership and governance structures such as the district and regional health directorates are in place to coordinate, plan, implement, monitor, and supervise responsive, decentralized, people-centred health care services. Fig. 6 below shows the structure of the sector.

Fig. 6: Structure of Ghana's health sector and administrative map



The primary level of care consists of community-based health planning and services (CHPS) zones, health centres, and primary hospitals (including district hospitals). The secondary level of care consists of secondary hospitals (including regional hospitals) which provide specialized services and receive referrals from the primary level. At the tertiary level of care are the teaching hospitals which provide highly specialized health care services and receive referrals from secondary level, and sometimes the primary level hospitals.

A quaternary level of care includes specialized health facilities such as the National Cardiothoracic Centre, the National Plastic Surgery and Reconstruction Centre, and the University of Ghana Medical Centre, which are becoming increasingly relevant in providing crucial, highly tailored interventions, services, and research in Ghana. This pragmatic approach to health service delivery in Ghana is complemented by referral and gatekeeper systems, quality assurance and accountability systems, and a health financing mechanism (the National Health Insurance Scheme), albeit with challenges. Ghana's health sector also enjoys partnerships and support from multilateral and bilateral institutions such as the United Nations agencies, the World Bank Group, USAID, JICA, and KOICA. Several local and international nongovernmental organizations and civil society organizations operate in the health sector and contribute to health service delivery in the country.

1.5 HRH GOVERNANCE

At the apex of Ghana's HRH governance is the Human Resources for Health (HRH) Development Directorate (HRHDD) of MoH which is responsible not only for providing a framework for the planning, development and management of human resources for the health sector, but also for coordinating the activities of health training institutions and sector-wide training including fellowships. The Directorate also has the mandate to formulate appropriate policies to ensure adequate education of appropriate numbers and mix of HR personnel, equitable distribution of staff, adoption of appropriate retention strategies, and performance-related reward systems that will help to achieve the MoH vision of improving the well-being of the Ghanaian populace.

The Directorate's mission is to formulate, implement, monitor and evaluate effective HRH policies that guide health workforce production, management, training and compensation, in collaboration with MoH agencies and stakeholders such as the academia, private sector and other health partners.

Although human resource governance is important in ensuring efficiency, it has not received much attention within the health sector. There are no adequate systems and structures in place at various levels. The lack of a reliable human resource information system for the entire health sector, the absence of oversight to ensure uniformity of practices across the various agencies, inadequate commitment for human resource research, monitoring and evaluation, poor leadership and management development as well as gender mainstreaming issues continue to affect the efficient management of the health workforce in Ghana.

1.6 HEALTH WORKFORCE CONTEXT

Ghana has made major strides in improving access to health services. This is evident in the increase in the health workforce, particularly doctors and nurses, which has resulted in an improvement of the health workforce density from 1 per 10 000 population in 2005 to 1 per 5707 population at the end of 2022 (2021 holistic assessment report). The nurse-to-population ratio also improved from 1 per 799 population in 2017 to 1 per 530 population in 2022.

In its quest to further improve access and address identified challenges, MoH developed a new National Health Policy (2020 –2030) themed "Ensuring the right to health". This policy seeks to guarantee the right to health for all people living in Ghana through the attainment of UHC and the related Sustainable Development Goal 3 (SDG 3) which is to "ensure healthy lives and promote well-being for all at all ages".

To address and respond to identified challenges and also facilitate the achievement of the objectives of the National Health Policy, a new National Human Resource Policy and Strategy document was developed. The rationale is to put in place an appropriate framework that ensures an adequate, concerted, and multisectoral response to strengthening the health workforce in Ghana to support the effective implementation and achievement of the goal of the National Health Policy, which is

> **"to continuously ensure the provision of appropriate integrated interventions that meet the health and wellness needs of the population."**

The National Human Resource for Health Policy recognizes several global, regional and subregional compacts and policy frameworks including the United Nations Sustainable Development Goals (SDGs) themed, "Transforming our world: the 2030 agenda for sustainable development". It also draws inspiration from the WHO AFRO Roadmap for scaling up human resources for health for improved health service delivery in the African Region (2015–2020) and the Global Strategy on Human Resources for Health: Workforce 2030 as well as support from the West African Health Organization (WAHO) Strategic Plan 2016–2020 for development of human resources for health.

1.7 RATIONALE/ JUSTIFICATION OF THE HEALTH LABOUR MARKET ANALYSIS

Ghana is about three years into the implementation of **the 2020 Comprehensive National Policy and Strategy for Human Resources for Health,** which outlines the different strategies needed to improve the production, training, and retention of health workers to attain the SDG3 and UHC. The revised HR Policy and Strategy was finalized without taking into consideration the COVID-19 implications. The COVID-19 pandemic put enormous strain on the health workforce, with potential negative impacts.

Access to health care is mostly constrained by health labour market inadequacies in certain geographical locations with shortages of health workers. Mismatch in the labour market can also lead to low productivity of health workers in health facilities. The global HRH challenge coupled with local mismatch has resulted in certain key health workers seeking to migrate to advanced countries to work. Mismatch in the labour market has also affected the workload distribution and can cause stress-related consequences and severe strain on health workers.

Ghana has been added to the WHO health workforce support and safeguards list. The updated list (2023) comprises countries facing the most severe health workforce vulnerabilities. These countries should be prioritized, per the provision in the WHO Global Code of Practice on the international recruitment of health personnel, for health workforce investment and safeguards against active international recruitment.

Ghana is, therefore, taking a new look at its workforce challenges and prioritizing investment for a better and smarter health workforce. In addressing the mismatches, Ghana will use strong scientific evidence to support the claims, with the HLMA providing evidence to inform decisions and interventions on the health workforce. The HLMA will also help to identify gaps in HRH policies which affect the dynamics of the labour market in areas related

to wages and retention, education and training, geographic distribution, skill mix, unemployment, and outmigration

The country has also initiated steps to operationalize and institutionalize the national health workforce account (NHWA). The results of the HLMA will feed into the NHWA indicators for the baseline year while subsequent updates of HLMA will be largely sourced from the NHWA data.

1.8 AIM AND OBJECTIVES OF THE GHANA LABOUR MARKET ANALYSIS

Although Ghana has been placed on the WHO health workforce safeguard list, the country continues to experience a brain drain on its health workforce. The path to attaining a UHC service coverage index of 64 by 2028 requires evidence-based policies on health workforce management that are informed by a scientific study on health labour market dynamics. The HLMA presents an opportunity to evaluate the country's health workforce education and training, stock and supply, demand and retention and the overall need for a health workforce that could adequately address the disease burden affecting Ghanaians. The related policy recommendations will be adequately backed by evidence on the status of the health workforce in Ghana. Guided by the policy questions highlighted in section 3 of this report, the objectives of this study were to:

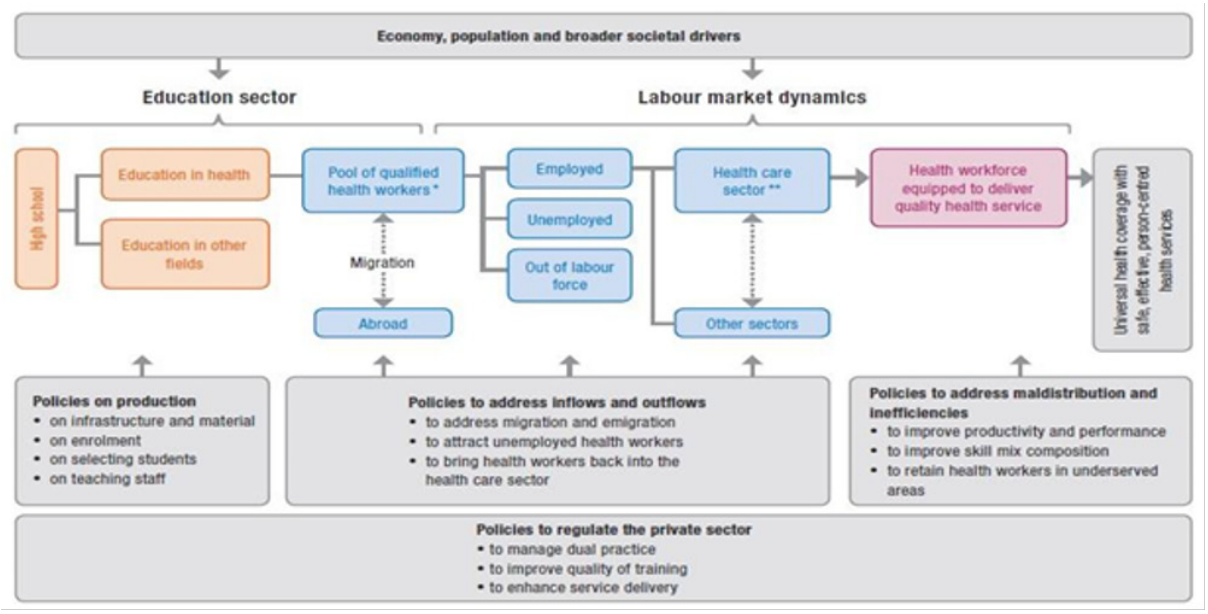
1. **undertake a descriptive analysis of the dynamics of supply and demand of health labour in Ghana;**
2. **develop a predictive normative need of the health labour force to address the disease burden / workload in Ghana; and**
3. **inform policy recommendations with regards to the production, net migration, distribution and productivity, and regulation of the health workforce**

Section 2:

IMPLEMENTATION PROCESS AND TECHNICAL METHODOLOGY

2.1 CONCEPTUAL APPROACH FOR THE HLMA

The HLMA provides an understanding of the HRH market dynamics and highlights current and potential labour market failures or mismatches requiring corrective policy actions. The health labour market is dynamic and is affected by policies and actions from sectors including education, labour, finance, employment, foreign affairs (concerning international migration) and health. The health labour market framework proposed by Sousa and colleagues (2013), and adopted by WHO (Fig. 7) was adopted for analysing core aspects of the health labour market in Ghana.



(Source: WHO,2016)

Fig. 7: Health labour market framework for UHC

The standard HLMA process is based on a transformative approach that follows a systematic format from the initiation stage through planning and execution to policy recommendations. Human resource strategy development and health workforce investment forums also form part of the HLMA process.

The initiation stage kicks off with lobbying to conduct the HLMA. This generally involves policy-level audiences such as MoH, the Ministry of Finance, the Ministry of Labour, health professional bodies, regulatory councils, and other stakeholders. It is at this stage that objectives for the Ghana HLMA were agreed upon, thereby setting the strategic direction for the HLMA. Also, the policy questions to meet the study objectives were determined at this stage.

The planning stage involved the formation of the technical team and their orientation on the concept of HLMA. At this stage, the roles of all the players in the health labour market were determined and articulated. The technical team also established the data requirements and indicators for the study. Data collection tools were also designed and agreed upon at this stage (Annex 1).

The execution stage included data consolidation, cleaning, triangulation, and analysis. At this stage, a sequential flow from the descriptive health labour market analysis to the exploratory phase of health worker perceptions was reviewed against needs modelling in the predictive analysis. Furthermore, to provide options for policy direction, a return on investment from policy decision assumptions was conducted. The findings obtained and subsequent recommendations enhanced strategic planning and set the stage for an investment dialogue for the health workforce.

2.2 OVERVIEW OF THE HLMA PROCESS IN GHANA

2.2.1 Process of HLMA implementation in Ghana

To generate strong scientific evidence for informing policy decisions to address the country's workforce challenges and prioritize investment for better and smarter health workforce, the country planned to conduct the health labour market study from November 2022 to June 2023. During this period, the exploratory survey that sought the views of health workers and their managers on the perception of their employment conditions, remuneration, and work commitment was conducted. However, the process could not be completed in time; it was completed subsequently in November 2023.

Figure 8: HLMA implementation in Ghana

3.Execution

- two-week workshop held in Winneba in September 2023 for data collection and report writing
- list of cadres to be studied
- five thematic working groups were created to address clinical standards and matching of interventons to cadres, financing, stock and supply, demand and education and training
- populated excel spreadsheets from the HLMA tool

Data triangulation & analysis

- data cleaning
- exploratory data cleaning and analysis
- country set-up models in HLMA tool
- descriptive health labour market models
- predictive health labour market models

selected summary results

HLMA report writing
six thematic areas

- descriptive write-ups
- validation of descrptive write-up with councils and regulators
- exploratory analysis, write-up and validation
- predictive analysis and write-up
- return on investment analsysis and write-up
- findings and recommendations

Source: Gantt chart Ghana HLMA

2.3 POLICY DIALOGUE ON INVESTMENT AND PROTECTION OF HEALTH AND CARE WORKERS IN AFRICA

Following the WHO AFRO's policy dialogue on investment and protection of health and care workers in Africa held in Ghana from 15 to 17 November 2022, where the HLMA was profiled, it was decided that the WHO Country Office in Ghana with technical support from WHO headquarters and WHO AFRO should lead Ghana's HLMA stakeholder sensitization.

2.3.1 Stakeholder sensitization meeting

Two successive HLMA sensitization/consensus meetings were held with the heads of agencies on 18 November 2022 at the MoH conference room.

2.3.2 Technical team orientation on HLMA

A two-day workshop was held on 19 and 20 November 2022 at the Peduase Valley Resort to orient the technical team on the concept of HLMA and provide them with the rationale for conducting a comprehensive HLMA study. The meeting also teased out the policy questions for the Ghana HLMA study.

2.4 PLANNING

2.4.1 HLMA methodology training workshop

A one-week methodology training workshop was organized for the technical team in Aburi with 41 participants in attendance. The WHO's new HLMA guide was the core training material used. Concepts covered were unpacked from the health labour market framework for UHC illustrated in Figure 8 above. The health worker exploratory survey tool was adapted to the intended focus of the analysis. A stakeholder analysis was done to establish the power and influence dynamics of various players in the health system.

2.5 EXECUTION AND PROCESS

2.5.1 Data collection

A two-week data collection and writing workshop was convened in Winneba from 3 to 15 September 2023. The objective of the workshop was to collect data that would be analysed to answer the policy questions that the HLMA sought to answer. Thematic areas were created to work on collecting data which would conform to the data requirements of the HLMA tool, to allow for the triangulation of the various data sets. Participants in the meeting included clinical personnel, administrative and policy level personnel from various government, quasi-governmental, private sector, training and education institutions.

The technical working group split into thematic areas based on their expertise as summarized in the subsequent section. All thematic groups used data entry spreadsheets customized for the HLMA analysis tool. The various indicators and data requirements were almost all scoped from the HLMA tool.

The exploratory data was collected using a Google form and consolidated into Excel for analysis.

2.5.1.1 Group 1: Setting activity standards and matching with disease burden

The group comprising clinical and ambulatory experts was set up to determine the activity standards for each health intervention, which would subsequently be matched with the disease burden to determine the need for health workers. The group was tasked with standardizing activities that health workers undertake in providing a service to a client for a particular disease. The same group also proceeded to match health interventions to population needs and cadres.

2.5.1.2 Group 2: Health workforce education

The second group was tasked to look at the education and training pipeline. The group gathered data relating to courses and faculty, numbers enrolled versus those that graduated from all the public and private training institutions for health workers in Ghana.

2.5.1.3 Group 3: Stock and supply

The third group looked at the health workforce stock and supply, determining those in employment, those actively searching for work, and those working outside the health labour market. Also, the group assessed the health workforce characteristics in terms of density, gender, age distribution, skills mix, geographical distribution, attrition and turnover rates.

2.5.1.4 Group 4: Demand

The fourth group was tasked to look at the demand for health workers, in both the public and private sectors. The same group would provide information on the remuneration and distribution of health workers.

2.5.1.5 Group 5: Health financing

The fifth group assessed the health systems/ workforce financing against macroeconomic fundamentals such as GDP growth. The group also assessed the potential for fiscal space that would enable scoping for more resources to health workforce retention, recruitment etc.

A plenary session was held to prioritize health cadres to be studied in the HLMA, based on the country's IHME disease prevalence data. The team set out to prioritize the cadre to be included in the HLMA considering the limited timeline, resources, and data constraints. With previous experience from other countries such as Zimbabwe, Eswatini, and Uganda, the Ghana team agreed to work within a cadre range of 60 to 65, hence the need to prioritize and select a health care professional cadre to meet the set target. Since Ghana had earlier carried out a survey as part of its HLMA, the survey list was adapted for the HLMA task team and clinicians to make comments on additions and subtractions based on their professional opinion about practice and experience in the Ghana health system.

From the initial analysis of the survey list, critical health professional cadres that were left out of the survey were then included. Thus, a second phase of pruning the list to the desired 60 was then achieved, through the expected advice and opinion of the clinicians and health care professional groups that were represented.

For example, expert representation from the Nursing and Midwifery Council led the team to screen the numbers of the nursing cadre to a critical limit that would be included in the cadre priority list. This method was replicated for the medical cadre and the allied health professional cadre, with each respective professional leading the process.

Following the prioritization of the 60 cadres, the technical team also agreed to include on the list of cadres to be studied in the HLMA, emergency technicians manning the Ghana ambulance service and specialist pharmacists. A list of 64 cadres was drawn up leaving room to add more cadres as needed when setting workload standards for cadres involved in disease interventions. As the matching exercise continued over two weeks, the final list included in the survey totalled 69 cadres. (Table 4)

Table 4: Priority health professional categories for study

	Occupation title used in the country	Equivalent ISCO classification
HW1	Audiologist	2266 - Audiologists and speech therapists
HW2	Biomedical engineer	2149 - Engineering professionals not elsewhere classified
HW3	Certified registered anaesthesiologist	2221 - Nursing professionals
HW4	Clinical psychologist	2634 – Psychologists
HW5	Community health nurse	3221 - Nursing associate professionals
HW6	Dental prosthetic technologist	3251 - Dental assistants and therapists
HW7	Dental surgeon	2212 - Specialist medical practitioners
HW8	Dental surgery technician	3251 - Dental assistants and therapists
HW9	Dietitian	2265 - Dieticians and nutritionists
HW10	Disease control	3253 - Community health workers
HW11	Emergency medical technician	3258 - Emergency medical personnel
HW12	Enrolled nurse	3221 - Nursing associate professionals
HW13	Environmental health officer	2263 - Environmental and occupational health and hygiene professionals
HW14	Environmental health technician	3257 - Environmental and occupational health inspectors and associates
HW15	Health promotion officer	3253 - Community health workers
HW16	Hospital equipment technician	2149 - Engineering professionals not elsewhere classified
HW17	Hospital equipment technologist	2149 - Engineering professionals not elsewhere classified
HW18	Medical laboratory scientist	3212 - Medical and pathology laboratory technicians
HW19	Medical laboratory scientist specialist	3212 - Medical and pathology laboratory technicians
HW20	Medical laboratory technician	3212 - Medical and pathology laboratory technicians
HW21	Medical officer	2211 - Medical doctors
HW22	Medical physicist	3211 - Medical imaging and therapeutic equipment technicians
HW23	Medical social worker	1344 - Social welfare managers
HW24	Medical specialist – anaesthesiologist	2211 - Generalist medical practitioners
HW25	Medical specialist - clinical oncologist	2211 - Generalist medical practitioners
HW26	Medical specialist - emergency medicine	2211 - Generalist medical practitioners
HW27	Medical specialist – ENT surgeon	2211 - Generalist medical practitioners
HW28	Medical specialist - family medicine	2211 - Generalist medical practitioners
HW29	Medical specialist - general surgeon	2211 - Generalist medical practitioners
HW30	Medical specialist - obstetrician & gynaecologist	2211 - Generalist medical practitioners

	Occupation title used in the country	Equivalent ISCO classification
HW31	Medical specialist - ophthalmologist	2211 - Generalist medical practitioners
HW32	Medical specialist - orthopaedic surgeon	2211 - Generalist medical practitioners
HW33	Medical specialist - paediatrician	2211 - Generalist medical practitioners
HW34	Medical specialist - pathologist	2211 - Generalist medical practitioners
HW35	Medical specialist - physician	2211 - Generalist medical practitioners
HW36	Medical specialist - plastic surgeon	2211 - Generalist medical practitioners
HW37	Medical specialist - psychiatrist	2211 - Generalist medical practitioners
HW38	Medical specialist - public health	2211 - Generalist medical practitioners
HW39	Medical specialist - radiologist	2211 - Generalist medical practitioners
HW40	Midwife	2222 - Midwifery professionals
HW41	Midwife specialist	2222 - Midwifery professionals
HW42	Nurse specialist	2221 - Nursing professionals
HW43	Nurse specialist - critical care/emergency	2221 - Nursing professionals
HW44	Nurse specialist - ENT	2221 - Nursing professionals
HW45	Nurse specialist - mental health	2221 - Nursing professionals
HW46	Nurse specialist - neonatology	2221 - Nursing professionals
HW47	Nurse specialist - ophthalmic	2221 - Nursing professionals
HW48	Nurse specialist - paediatric	2221 - Nursing professionals
HW49	Nurse specialist - perioperative	2221 - Nursing professionals
HW50	Nutrition officer	2265 - Nutrition and diet therapist
HW51	Occupational therapist	2269 - Occupational therapist
HW52	Occupational therapy assistant	3257 - Environmental and occupational health inspectors and associates
HW53	Optometrist and optician	2267 - Optometrists and ophthalmic opticians
HW54	Pharmacist	2262 – Pharmacists
HW55	Pharmacist specialist	2262 – Pharmacists
HW56	Pharmacy technician	3213 - Pharmaceutical technicians and assistants
HW57	Physician	3256 - Physician assistant practitioners
HW58	Physician assistant (coho)	3256 - Medical assistants

	Occupation title used in the country	Equivalent ISCO classification
HW59	Physiotherapist	2264 – Physiotherapists
HW60	Physiotherapy technician	3255 - Physiotherapy technicians and assistants
HW61	Prosthetics and orthotics technician	3214 - Medical and dental prosthetic technicians
HW62	Public health nurse	2221 - Nursing professionals
HW63	Radiographer therapy/diagnostics	3211 - Medical imaging and therapeutic equipment technicians
HW64	Registered general nurse / State registered nurse	2221 - Nursing professionals
HW65	Respiratory therapist	3259 - Health associate professionals not elsewhere classified
HW66	Speech and language therapist	2266 - Audiologists and speech therapists
HW67	Technical officer (X-ray)	3211 - Medical imaging and therapeutic equipment technicians
HW68	Traditional medicine practitioner	2230 - Traditional and complementary medicine professionals
HW69	Nurse specialist – oncology	2221 - Nursing professionals

(Source:) HLMA Study 2023

2.5.2 Data triangulation and analysis

The Excel spreadsheets for data collection and entry used by the various thematic groups were consolidated into the HLMA tool.

These had been exported from the descriptive labour market models 2-9 covering training and education, supply, distribution and labour market flows, vacancies and demand analysis and health workforce financing. Delays were experienced in completing model 2 for health education and training and model 9 for population health needs (epidemiological) method under the predictive health labour market models. A group was tasked to input information for model 1 country health system set-up.

The thematic group on demand completed models 7, 8 and 9 while the financing group worked on model 10 on health workforce distribution equity, economic feasibility and the return-on-investment spreadsheets.

The descriptive labour models were all completed by the end of the workshop and the analysis was done. However, matching population health needs to the workload by interventions delayed the completion of the predictive analysis. Supply forecasting (stock and flow was completed) and results for analysis were generated during the data collection and report writing workshop. The predictive analysis was only completed one week after the data collection and report writing workshop when the clean-up for model 9 sheet 3 on aligning to the essential health package was completed by the WHO AFRO team.

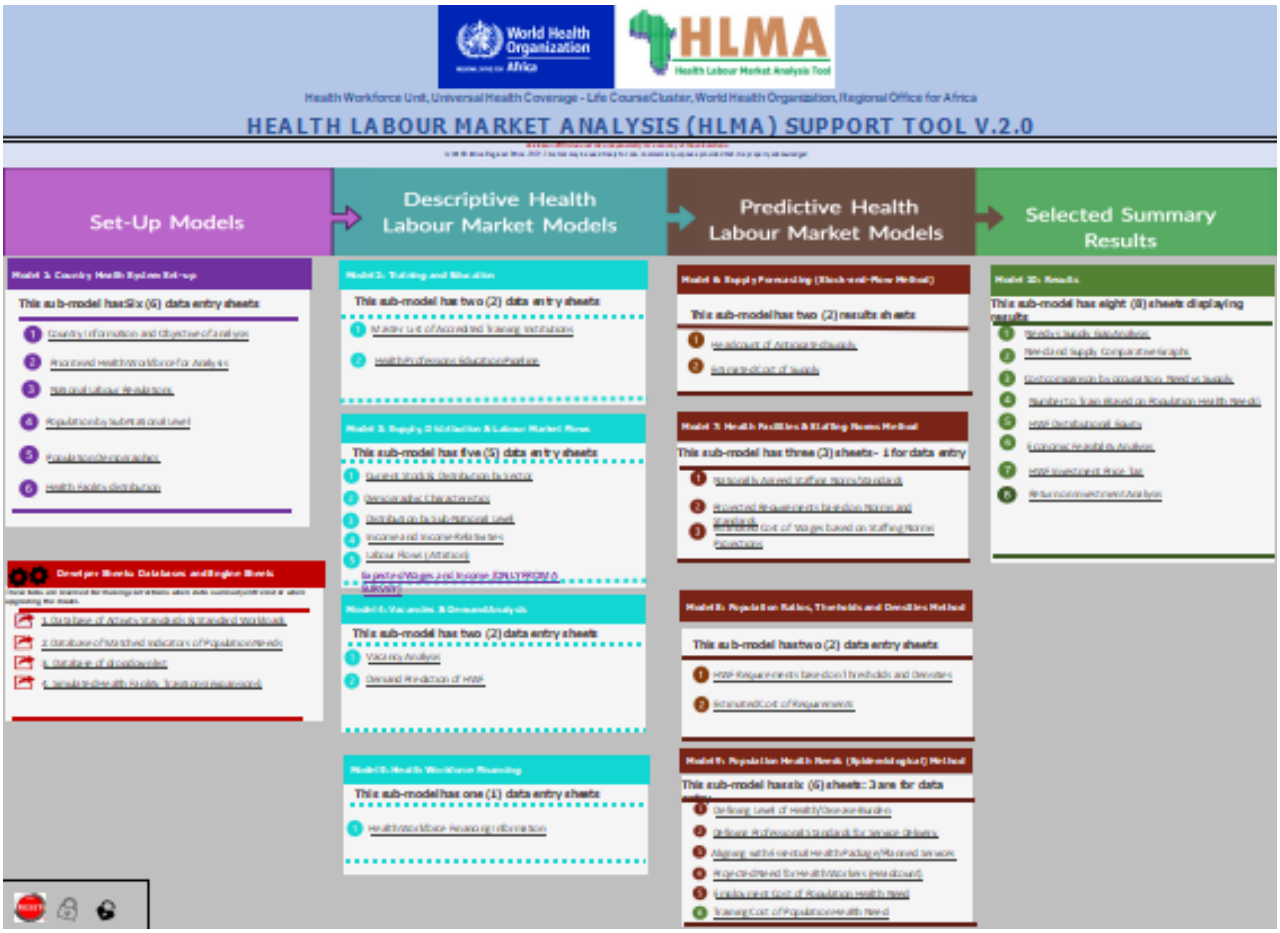


Figure 9: HLMA labour market analysis tool

2.5.2.1 Descriptive and predictive labour market analysis and modelling

Based on the data gathered, the technical task team undertook a labour market modelling (need, supply, and economic space), a process conducted using known methods and frameworks. The findings of the modelling exercise were strategically interpreted taking account of the national context.

2.5.2.2 Descriptive analysis of the size, composition, and distribution of the health workforce

An analysis of Ghana's health workforce quantity, composition, distribution, and trends was conducted using descriptive statistics.

Triangulation of data from several sources was done and compared with evidence from various studies and policy papers. Qualitative insights were also gained from stakeholder interactions. To enable regional and international comparison and data analysis, Ghana's health worker categorization was linked to an internationally recognized health worker occupational grouping (the international standard classification of occupations [ISCO-08]).

2.5.2.3 Analysis of current situation and past trends

To extract results from the HLMA tool, its components were analysed, and presented as tables, graphs, and/or verbal descriptions, where appropriate. The size, character, and distribution of Ghana's health workforce was analysed using descriptive statistics of trends, and interpreted with qualitative insights from stakeholders and expectations. A trend analysis was conducted on the health sector's contribution to the overall economic activity as measured by GDP.

The analysis included a graphical trend of the entire health sector's proportional contribution to the country's total economic output. Another trend analysis was performed on health sector employment as a share of total employment in the country. Also, the attractiveness of the health sector was assessed by comparing health sector remunerations with those in different industries.

2.5.2.4 Modelling the future supply and needs-based requirements for health workers.

Using existing frameworks developed and recommended by WHO, the Ghana health sector demand and supply analysis of the labour market was conducted. To determine the current population-based health workforce requirements and estimate future needs, the need-based framework of the health workforce was modelled.

1 **Health workforce supply forecast:** The supply-side forecasting involves determining the inflow or entry into the current workforce and outflow or attrition from the current workforce. While inflow depended on training, capacity and immigration, outflow/attrition was influenced by retirements, emigration, deaths, resignations, and dismissals of health workers.

2 **Forecasting economic demand for health workers:** The economic demand for health workers is reflected in a country's ability and willingness to pay for a health workforce. This estimates the joint capacity of the government, development partners and the private sector to acquire health care services, the cost of health workforce wages representing a substantial proportion of this capacity. This approach is based on the understanding that a country will not spend more on health care than it can afford, even if the health or level of health consumption is lower than internationally defined standards. Fig. 6 shows the framework for the need-based health workforce planning.

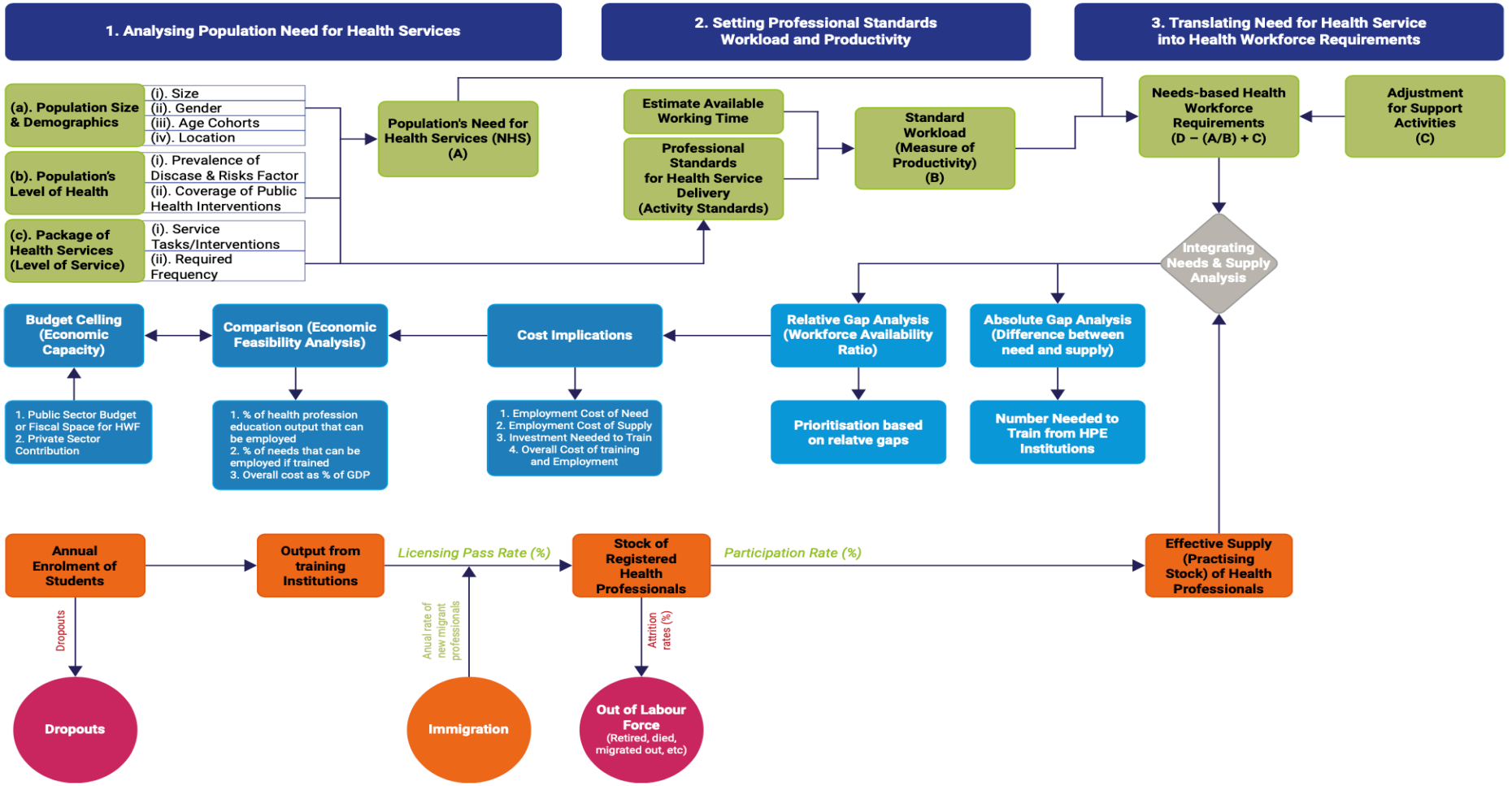


Figure 10: Framework for need-based health workforce planning

Source: Adapted from Asamani et al.[1]but defective planning have arguably resulted in underinvestment in health professions education and decent employment. Primary Health Care (PHC

1 James Avoka Asamani, Christmal Dela Christmals, and Gerda Marie Reitsma (2021). Modelling the supply and need for health professionals for primary health care in Ghana: Implications for health professions education and employment planning. In: PLOS ONE, 16.9, e0257957 (<https://doi.org/10.1371/journal.pone.0257957>).but defective planning have arguably resulted in underinvestment in health professions education and decent employment. Primary Health Care (PHC

1. Modelling the need-based requirements for health workers

Although there are several methods for determining the 'needed' health workforce in a country, the Global Strategy on Human Resources for Health recommends the need-based approach as it aligns investments to the population's health needs. The Ghana HLMA adopted the need-based or epidemiology approach on the assumption that the need for health workers in the country depended on the 'need for health services' as defined by the disease burden and structure of the population alongside the country's health service delivery model. To determine the need for a health workforce, the following technical steps were followed:

- **Estimating the population's 'need for health services':** The priority was to assess the 'need for health service' that addresses at least 98% of the population's disease burden and risk factors. Using data from the country's health information and surveillance system, the list of diseases and risk factors that account for 99% of morbidity and mortality in Ghana was established. A desk review was conducted by a team of epidemiologists and statisticians to determine the prevalence rates of the diseases and risk factors, as well as the targets for the coverage rates of priority public health interventions. The disease burden and risk factors were mapped using routine health information from the health information and surveillance system and health facility attendance.

- **Translating the need for health services into needs-based staffing requirements:** With the technical assistance of clinical experts drawn from the health workforce and concerning experiences from other countries that have conducted similar HLMA studies, a standard workload was determined for each health intervention identified by the clinical experts. Standard workload – representing a measure of productivity – is defined as the volume of work within one health service activity that one health worker can accomplish within a year to acceptable professional standards. The estimated "need for health services" was then translated into the health workforce using the standard workload.

2. Forecasting budget space for the health workforce

The ability and desire of a country to pay for health professionals to address its population's health needs reflects the country's economic demand for a health workforce. Economic demand is influenced by factors such as population size, demographic trends, disease prevalence, health care infrastructure, government policies, and funding priorities. Thus, aggregate demand is an assessment of the combined financial capacity of the government, development partners, and private sector to purchase health care services, including the cost of health workers' wages. This approach is based on the assumption that countries (governments and partners) will not necessarily spend more on health care than they can afford, even if their health or level of health utilisation falls below internationally defined standards. As a result, demand for health workforce can be assessed by adjusting for the private sector's contribution to health workforce employment and utilizing budget space for the wage bill as a proxy. The health sector budget was analysed over successive years to measure the level of priority towards the health workforce.

3. Exploratory survey methodology

To understand the perspectives and experiences of health workers in different regions and health facilities in Ghana, the exploratory survey in Ghana employed a descriptive survey design wherein regions and health facilities were randomly sampled for inclusion. Subsequently, health workers working in these selected regions were consecutively selected as respondents for the survey. The survey design minimized bias while increasing the generalizability of the findings.

There were 2720 respondents to the survey questionnaire among health workers across the 69 prioritized staff categories. The survey was conducted using a standardized tool adapted from the OECD, previous HLMAs and research. The survey aimed to gather essential information about the country's health workforce. It focused on several key aspects, including the total number of available health workers, the availability of job opportunities in both the public and private sectors, and the required number of health professionals to meet the needs of the population. Additionally, the survey sought to gather data on wage expectations among health workers and their intentions regarding migration. The purpose was to understand the factors influencing health care professionals' decisions to leave or stay in their current positions or migrate to other locations.

The following limitations of the study were taken into account in conducting and interpreting the survey results:

data availability and quality:

data was in some instances not accurately provided, especially data on income and wage expectations. Also, some of the sampled workers used for analysis present limitations in terms of coverage and representativeness;

non-response bias:

not all sampled health workers responded to the survey, leading to non-response bias. The survey acknowledges that the characteristics and experiences of those who chose not to participate may differ from those who responded, potentially introducing bias in the survey results;

self-reporting bias:

this survey also relied on self-reported information from respondents. The limitations on the accuracy and reliability of self-reported data which may be influenced by factors such as memory recall, social desirability bias, or subjective interpretations, might have resulted in inaccuracies or inconsistencies in some of the survey responses; and

the HW interviewed were mostly the ones working full time due to the difficulty in reaching out to the part-time and unemployed health professionals.

To ensure a comprehensive and accurate data collection process, the survey was carried out by a multisectoral and multistakeholder task team. This approach involved collaboration among various sectors and stakeholders, including government bodies, health care organizations, and other relevant entities.

4. Report writing, validation and consensus building.

A report writing session was convened with the participation of the technical task team and the technical assistance of WHO AFRO experts to outline the key elements of the report and address any data gaps or inconsistencies. During this session, a draft version of the report (zero draft report) was developed and presented to MoH for initial review and feedback. Subsequently, a technical and stakeholder review and validation workshop was held to discuss the accuracy and appropriateness of the data and findings presented in the report. Following the validation exercise, and based on the feedback received, recommendations and concrete policy actions were finalized and submitted to MoH. To foster collaboration and discussion among various stakeholders from different sectors and ensure effective investment in the health workforce, MoH subsequently convened a multisectoral and multistakeholder dialogue on health workforce investment.

5. Data sources, validation, and quality assurance

To ensure the validity, consistency, and acceptability of the data used in the study, multiple data validation processes were employed at different stages. These included a mix of expert opinions, record references from various sources, government reports, quasi-government reports, UN agencies' data banks and international institutions' online databases. These processes aimed to verify the accuracy and reliability of the gathered data. To ensure the reliability and credibility of the data utilized in the survey, a hierarchical approach was adopted (see Figure 11). This approach involved prioritizing data sources based on their reputation and trustworthiness. In cases where there were uncertainties or doubts regarding the validity of specific data, especially those used in projection assumptions related to estimating health workforce needs for delivering health services, the task team sought the input of relevant stakeholders for their expert opinions.

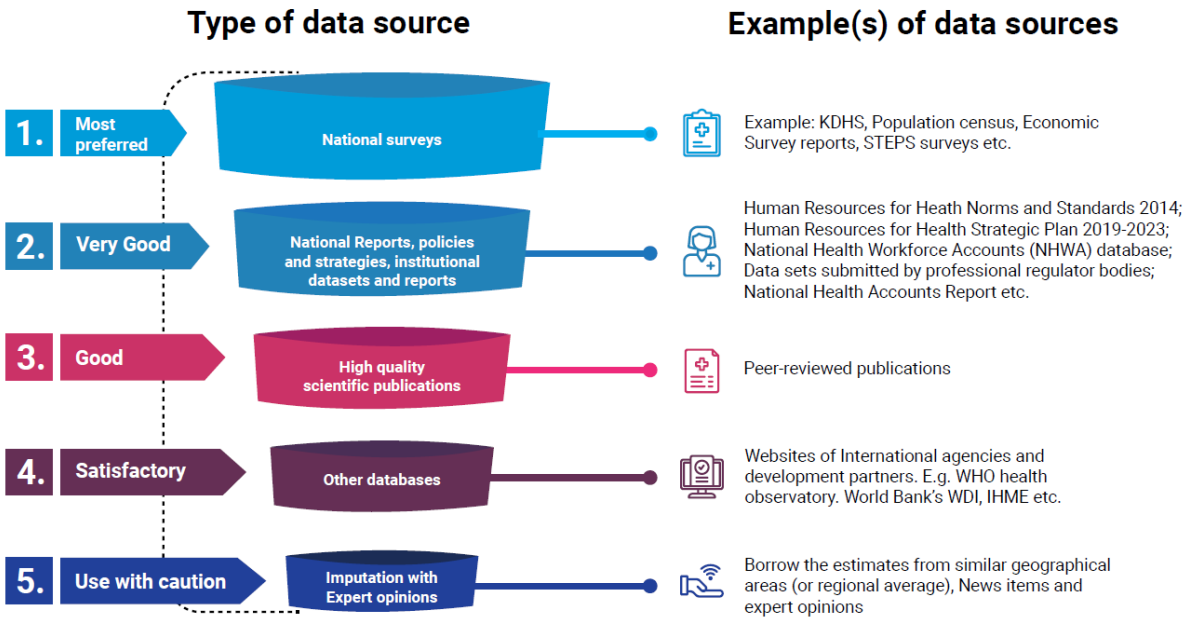


Fig. 11: Hierarchy of data sources used in the analysis

Source: Adapted from WHO[3]

Section 3:

THE POLITICAL ECONOMY AND MACROECONOMIC FACTORS INFLUENCING THE HEALTH LABOUR MARKET

This section analyses the diversity, processes, and complementarities between stakeholders in the HRH landscape in Ghana and how their various interests interact with macroeconomic factors to shape labour market outcomes. Identified stakeholders and technical experts deliberated and identified four key areas to be prioritized as outlined in Box 1.

BOX 1: PRIORITIZED POLICY QUESTIONS ON POLITICAL ECONOMY AND MACROECONOMIC FACTORS

- What is the nature of the interaction and complementarity among the public, private, quasi-governmental, and health partners, and how these can be improved in terms of planning, accreditation, training, recruitment, and deployment of the health workforce?
- How can the supply, demand, and need mismatches be addressed to improve overall health labour market absorption capacity for new graduates in Ghana while ensuring financial sustainability?
- How can we improve health workforce development and distribution (deployment, recruitment, and retention) across Ghana and ensure that the health workforce has the right skills towards the attainment of UHC and the SDG health-related goals?
- How can the migration of health professionals be made optimally beneficial for both Ghana and the destination countries?

3.1 NATURE OF INTERACTION AMONG STAKEHOLDERS

During the stakeholder mapping process, 86 people were engaged through sensitization workshops and technical working group meetings. The process identified 11 groups of key stakeholders who played various roles in health workforce development, employment, retention and utilization. Among them, MoH, FWSC, PSC, PRB, SDA (including the private sector), the Labour Commission, and Labour Union were seen to have high interest and high power requiring their constant involvement and engagement in all matters of workforce discussions. HTIs and development partners were identified as having high interest but moderate-to-low power requiring that they be engaged or informed at critical points in time. Also, the Ministries of Finance (MoF) and Education (MoE) had moderate interest but high power requiring active engagement and advocacy to gain their buy-in in addressing workforce challenges in the country.

Among the stakeholders, MoH and its regulatory agencies alongside MoE were identified as the key actors in the production and training of health workers that influence supply levels. The interaction between these stakeholders, however, needs to be improved through regular dialogue and integration of processes, as appropriate.

The generation of demand for health workers is largely initiated by MoH with inputs from its service delivery agencies (based on the staffing norms or service requirements). MoF which has moderate interest but higher power, is ultimately responsible for the allocation of the health workforce budget, and for the approval and utilization for the health workforce. This process is mediated by the Public Services Commission which has a mandate to grant technical clearance.

Although the interactions between these entities are working, it was noted that the level of engagement could be improved with long-term planning.

Labour unions/associations have significant power through their membership and have been influencing health workforce policies and strategies in terms of training, employment and conditions of service. The exercise of this power has been largely through negotiations and coercive labour practices. Industrial action by labour unions was rampant in the past. Although this has reduced today, there was still room for improving labour relations.

Participants were officials from MoH central services and agencies (service delivery agencies, teaching hospitals and regulatory bodies) as well as quasi-government hospitals and the private health sector. Others came from MoF, MoE and the Ghana Statistical Service. Also in attendance were the environmental health officers from the Water and Sanitation Agency, veterinary services and academic institutions.

Currently, stakeholder coordination is at two levels. The first coordination mechanism is at the directors level, usually coordinated by the relevant MoH director with officials from the agencies including quasi-governmental institutions and the private sector, which discusses high-level policy and strategy issues. The second coordination mechanism is at the technical level where an HRH technical working group is in principle established to provide a forum for deliberation, consensus building and dissemination of policy and strategy issues on the health workforce. However, due to logistical and other constraints, the above-mentioned coordination mechanisms have become ad hoc and require additional effort to institutionalize them.

Table 5: Stakeholder interest analysis

S / No.	Stakeholder	Level of interest	Level of power	Function	Specific functions related to the health workforce
1	MoH (MoH)	High	High	Ensures policy formulation, resource mobilization, monitoring and evaluation, and research	• Initiates and controls the formulation of policy and strategies. • Negotiates with the Ministry of Finance for budget allocation and financial clearance to engage new staff and sustain existing staff. • Convenes stakeholders for national consensus building on health workforce (HWF). • Determines admission quota for health training institutions.

S / No.	Stakeholder	Level of interest	Level of power	Function	Specific functions related to the health workforce
2	Ministry of Education (MoE)	Moderate	High	Ensures education policy formulation, education quality assurance monitoring and evaluation, and research	• Through tertiary education institutions, trains health professionals at the graduate and postgraduate levels (usually with input from MoH regulatory agencies) • Through the Ghana tertiary education commission, accredits curricula and institutions for the training of HWF. • Through the commission for technical and vocational educational training (CTVET), trains other health and care workers mostly with limited or no input from MoE.
	Fair wages and salaries commission	High	High	Determines the remuneration of public sector workers	• Negotiates with organized labour and health sector labour unions during salary reviews and collective agreements. • Approves the establishment of new grades and occupational groups in consultation with MoH.
	Labour commission	High	High	Settles labour disputes	• Provides arbitration services to address unresolved labour issues between MoH and its employees

S / No.	Stakeholder	Level of interest	Level of power	Function	Specific functions related to the health workforce
3	Health training institutions	High	Moderate	Ensures enrolment and training, students' welfare,	• Publicly funds training institutions, based on the admission quota provided by MoH, select qualified candidates from the pool of applicants and ensure theoretical and clinical tuition until completion. • Private training institutions train health workers based on regulatory quotas.
4	Ministry of Finance	Moderate	High	Performs financial resource mobilization and budget allocation	• Based on the approved budget, MoF provides financial clearance to MoH for the employment of newly qualified and retention of the existing health workforce.
	Parliament	High	Low	Reviews and passes laws that affect HRH	• Approves budget and influences resource allocation towards HRH from the government.

S / No.	Stakeholder	Level of interest	Level of power	Function	Specific functions related to the health workforce
5	Public services commission	High	High	Provides technical clearance and HR ceilings	• Grants technical clearance for employment based on agreed staffing norms. • Approves staff establishment levels. • Provides a framework for management of public sector workforce. • Organizes the assessment of appointment of high-level public sector employees. • Provides statutory advice to the President of the Republic on executive-level appointments in the public service.
6	Professional regulatory bodies (MDC, NMC, AHPC, PsyC, PharmC, HeFRA, MoFFA, TAMC)	High	High	Develops and maintains the highest level of professional standards	• Determines curricula content and liaises with GTEC for the assessment and accreditation of health professional training and education institutions. • Develops professional standards and ensures their enforcement to secure public interest.

S / No.	Stakeholder	Level of interest	Level of power	Function	Specific functions related to the health workforce
7	Labour unions	High	High	Advocate the welfare and conducive working environment for their members.	• Negotiate conditions of service that contribute to the retention of workers. • Contribute to ensuring professional accountability of their members. • Contribute to market entry strategies for their respective professional areas. • Advocate for investment in health.

S / No.	Stakeholder	Level of interest	Level of power	Function	Specific functions related to the health workforce
8	Service delivery agencies (Ghana Health Service, Christian Health Association of Ghana, teaching hospitals, Mental Health Authority, Ahmadiyya Muslim Health Services Ghana, quasi-governmental, private sector	High	High	Provide health care service to the population. Ensure the safety of practicum for students, provide facilities for practical and preceptorship	• Ensures utilization and performance of health workers. • Provide a working environment in which health workers provide their services. • Contribute to the management and retention of health workers. • Contribute to the education and training of health workers. • Provide inputs for the planning, development, recruitment, and distribution of health workforce.
9	District assemblies	Moderate	Moderate	Develop and implement plans and strategies for effective mobilization of resources for training. Monitor and supervise physical infrastructure projects	• Contribute to social accountability and the distribution of health workers within the district. • Provide scholarship/allowance to students with a view to securing return-of-service.

S / No.	Stakeholder	Level of interest	Level of power	Function	Specific functions related to the health workforce
10	Telecommunication companies	Low	Low	Provide and maintain telecommunication infrastructure.	• Corporate social responsibility contributes to workforce development, motivation, and retention. • Provide interconnectivity for service delivery.
11	Development partners/ NGOs/ CSO	High	Moderate	Ensure resource mobilization and allocation, contribute to policy formulation	• Provide resource mobilization/technical advice.

: HLMA stakeholder analysis

3.2 MACROECONOMIC FACTORS INFLUENCING THE HEALTH LABOUR MARKET

Ghana's average gross domestic product (GDP) growth rate stood at 4.28% for the past five years from 2018 to 2022. The economic growth rate was estimated at 6.5% in 2019 before the COVID-19 pandemic, which drastically slowed the growth rate to 0.5% in 2020. Economic recovery remained shaky. The growth rate reached 5.1% in 2021 but declined to 3.1% in 2022. According to estimates, the outlook will remain shaky with growth averaging 3.1% up to 2028 as shown in Figure 12.

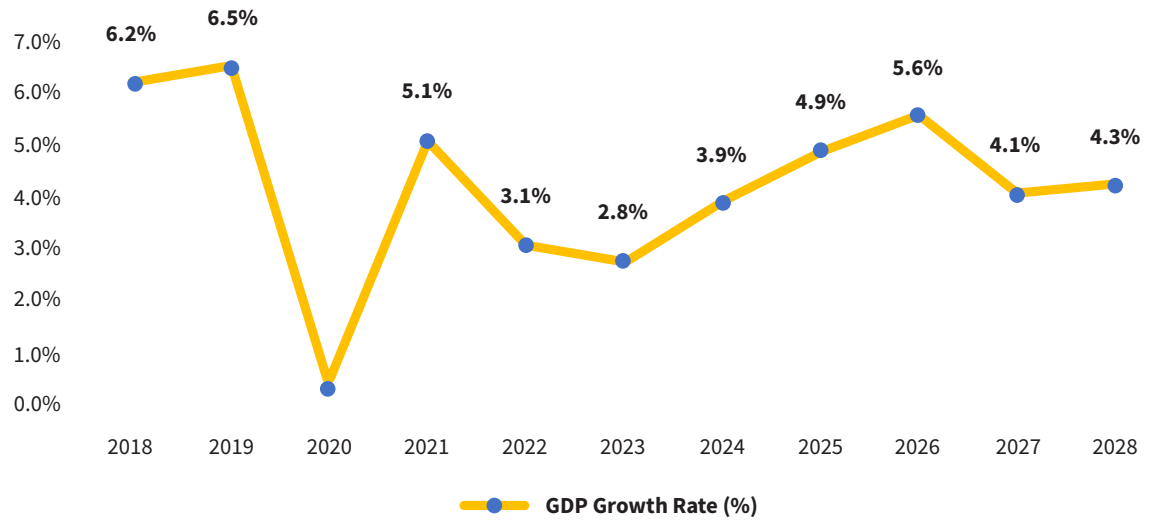


Figure 12: Trend in GDP growth rate, 2018-2022 and projected to 2028

Source: (Ministry of Finance Ghana)

The government's ability to prioritize and finance health expenditure depends on the size and growth of the economy, and its ability to mobilize revenue through taxes, loans, and grants. Given the anticipated sluggish economic growth, additional investment in health – within which the health workforce investment can be prioritized – may be driven by efficiency gains rather than inflows from taxes.

3.3 FUNDING FOR HEALTH

The trend in the health budget between 2018 and 2021 shows an increase in the overall health sector budget, but there was a significant decline in 2020–2021. In the prepandemic era, the MoF's 2018 budget statement showed an approved budget of US$ 963 million for the health sector. The budget allocation for the health sector increased nominally by 46.6% between 2019 and 2020 but decreased by 3.6% between 2020 and 2021. The increase in 2020 was due to the release of additional funding to support COVID-19 activities. The budget implementation rate for 2020 and 2021 were 83.27% and 126.86% respectively, indicating that in 2021, MoF received about 26.86% more funds over the budget to pay off arrears that had accumulated from 2020 COVID-19 expenditure.

The approved health sector budget rose by 18% between 2021 and 2022 which can be attributed to a 47% increase in donor support. The Government of Ghana (GoG) remains the major financier in the sector providing 66%, 62% and 59% of the total approved budgets for 2020, 2021 and 2022 respectively. Donor contributions represented 11%, 10% and 13% respectively.

As shown in Fig. 13, the prioritization of health within government spending has dwindled from an average of 9.9% between 2005 and 2015 to the current average of 6.4% since 2016.

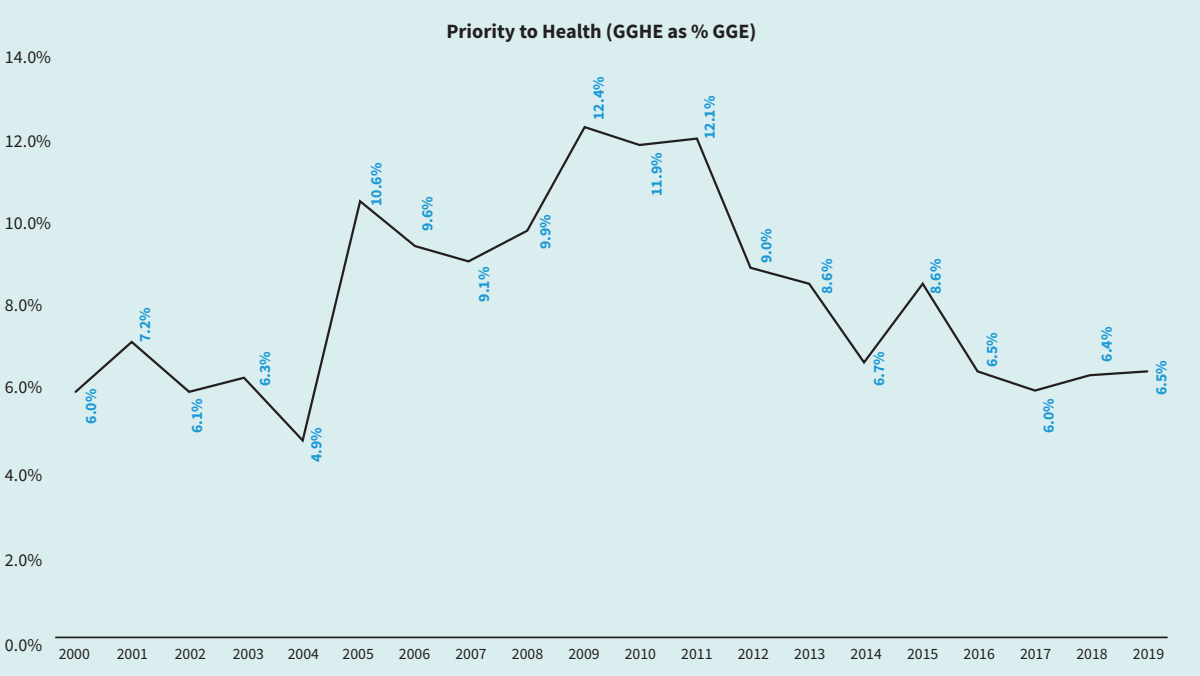


Figure 13: Priority to health (General government health expenditure as a percentage of general government expenditure)

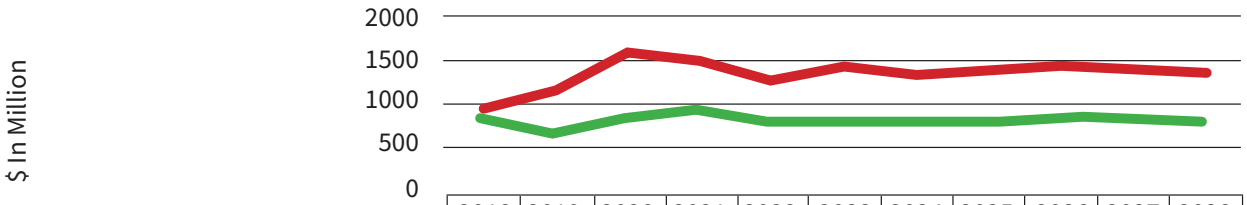
Source: ¯Global health expenditure database, 2019.

3.4 HEALTH WORKFORCE FUNDING FOR SALARIES AND BENEFITS COMPARED WITH OVERALL HEALTH SPENDING

According to available medium-term expenditure framework (MTEF) estimates converted to US dollars using the government rate, the average nominal wage bill between 2018 and 2024 was about US$ 287.9 million (range: US$ 687.13 – US$ 948.24).

The available annual budget for the public sector wage bill was reduced from US$ 862 million in 2018 to US$ 687 million in 2019. The value increased in 2020 and 2021 but decreased in 2022 to US$ 794 million. In 2023, the health sector wage bill was US$ 809 million. Extended with a six-year moving average, it is projected to be US$ 823 million by 2028.

The health workforce budget consumes on average between 63% and 76% of the recurrent health budget (excluding allocations to the National Health Insurance Authority) versus an average of 57% at the global level, 49% in the African Region and 65% for lower-middle income countries. From the foregoing, as a lower-middle-income country, Ghana's relative HWF expenditure exceeds that of its peers. However, the level of investment allocated to health from the overall government budget is also lower than Ghana's peers. Thus, the tight budget space for HWF largely stems from inadequate investment in health overall with a knock-on effect on HWF. It is imperative to explore innovative ways of improving health spending within which to prioritize HWF investments.



	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
General Government Health Expenditure (GGHE) – Current USD	963	1,157	1,582	1,470	1,299	1,411	1,314	1,372	1,408	1,379	1,364
Available Budget for Public Health Sector Wage Bill (Budget), USD	862	687	865	949	795	809	828	822	845	841	823

Figure 14: Trend of GGHE and public health sector wage bill

3.5 HEALTH WORKFORCE REMUNERATION AND MANAGEMENT PROCESSES IN THE PUBLIC SECTOR

3.5.1 Process for setting and reviewing public sector remuneration.

The fair wages and salaries commission (FWSC) was established by law (Act 737 of 2007) to determine the level of remuneration and benefits for public sector workers, including those of MoE and its agencies. On an annual basis, the tripartite committee made up of government (represented by the Ministry of Employment and Labour Relations and FWSC), employers' the association and organized labour negotiate the minimum wage and annual percentage increase (or decrease) in public sector salaries.

Following the conclusion of negotiations, the adjustment in the salaries of public sector employees is communicated to MoF to instruct the controller and accountant-general to implement. Similarly, private sector employers may, based on their collective agreement and institutional mechanisms, adjust the remuneration of their employees – anyhow, not lower than the negotiated minimum wage. In recent years, an annual average increase of 10% has been implemented but this varies by year depending on macroeconomic indicators. Whenever negotiations between employers and their employees break down, the National Labour Commission (NLC) may receive a petition from one of the parties and may conduct a hearing or arbitration to settle the labour dispute. Since the NLC's ruling carries the powers of the High Court, their decisions are enforceable through the courts. However, the sometimes long-winding procedures and mistrust from parties have, in some cases, led to industrial action and intensified labour unrest.

3.5.2 Mapping of the processes and time requirement to create a new job.

When new positions or job categories are to be created, MoH working with its relevant agency, conducts an assessment to identify the need, develop appropriate job descriptions and propose a scheme of service. MoH then submits the scheme of service to the Public Services Commission for review and approval. The approved scheme of service together with the job description is then submitted as a proposal to FWSC for consideration.

FWSC then undertakes an independent or joint review with MoH to adequately ascertain the need for the new post or job category. The commission then grants approval (or decline) with the appropriate level of placement on the single spine salary structure (SSSS). The approved post, remuneration and benefits are then communicated to the controller and accountant-general department (CAGD) for implementation through MoF.

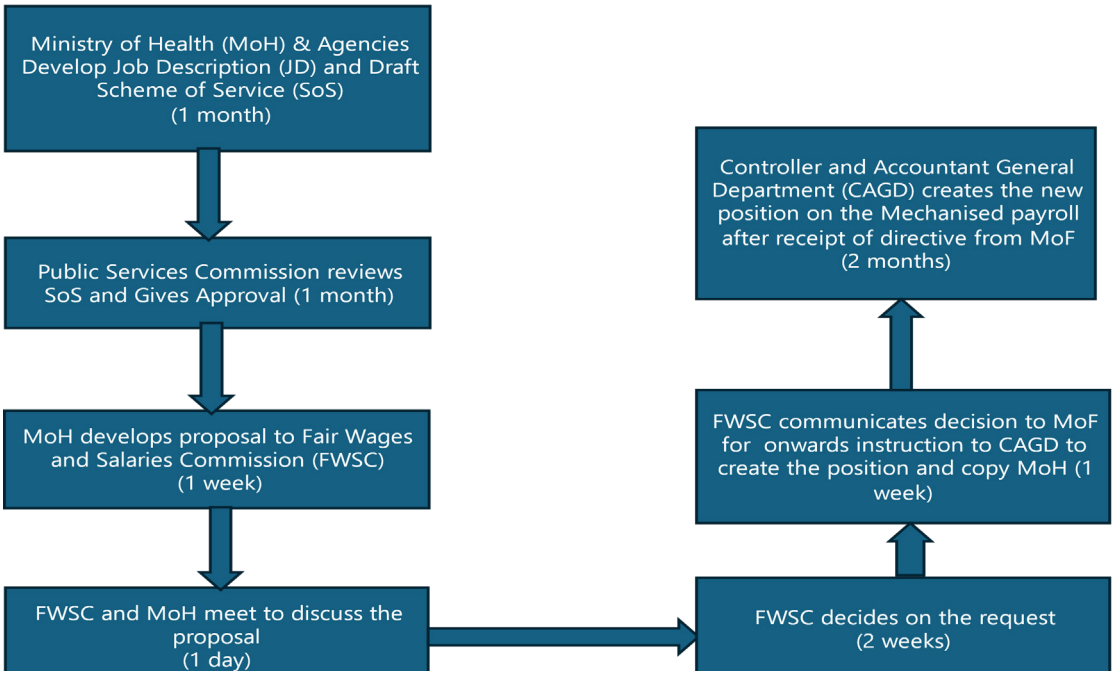


Figure 15: Process and time requirement to create a new job

In collaboration with the respective agency, the process of creating a new job takes about nine months. The process begins with the development of the job description of the occupational class. Consequently, the scheme of service is developed with support from the Public Services Commission (PSC). The scheme of service is therefore submitted to the PSC for approval. Upon receipt of the approval of the scheme of service, MoH then develops a proposal regarding the placement of the new job on the salary structure and forwards the proposal to the fair wages and salaries commission for consideration and approval.

After the submission of the proposal to FWSC, a meeting is scheduled between MoH and FWSC to discuss the content of the proposal. After the meeting, FWSC then conducts interval checks and reviews to determine the relative worth of the job. It communicates the decision to MoF for onward instruction to CAGD to create the position and copy MoH. The controller and accountant-general department (CAGD) create the new position on the mechanized payroll.

3.5.3 Mapping of the processes and time requirement to fill vacant posts.

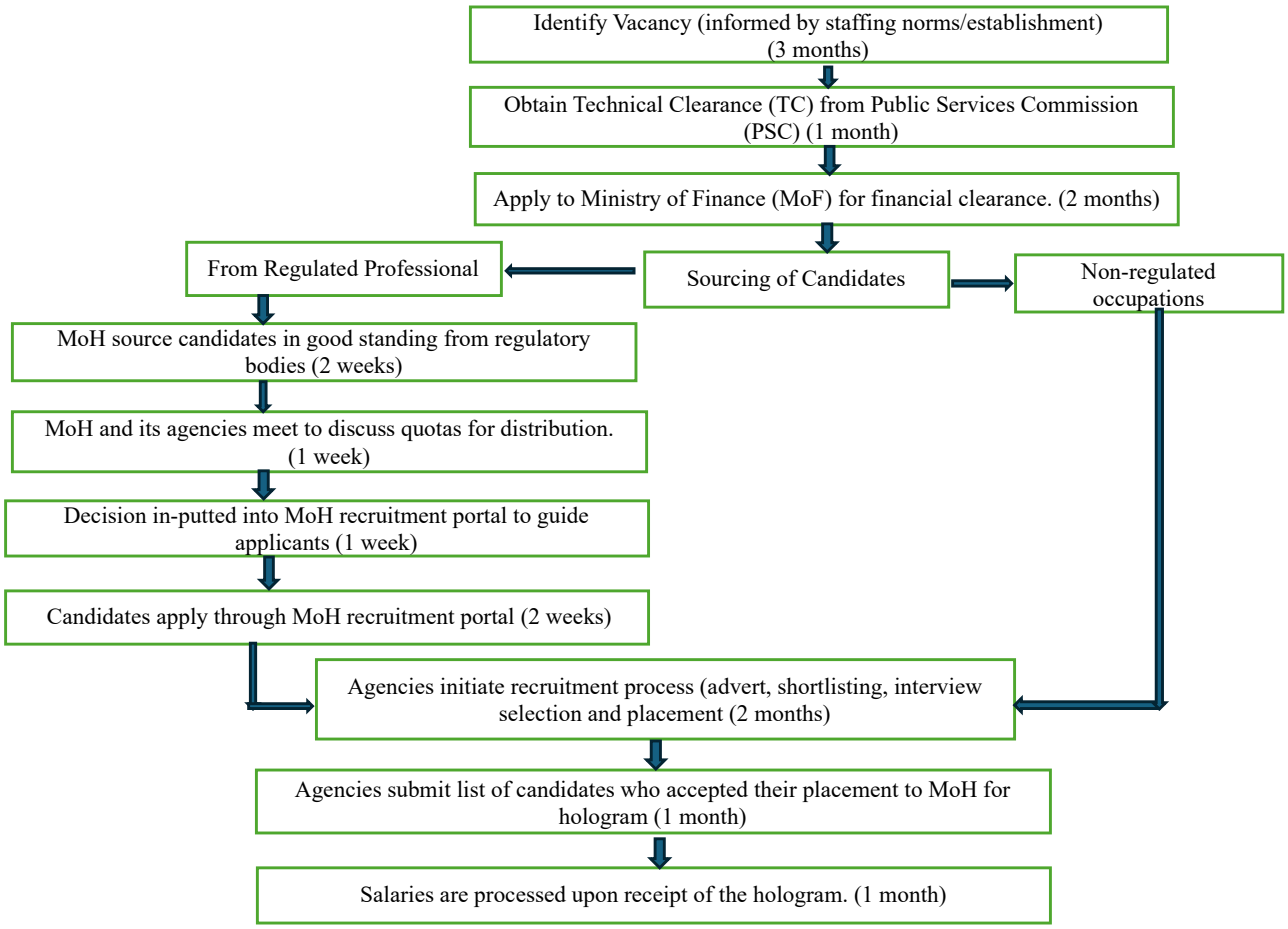


Fig. 16: Process and time requirement to fill vacant posts

Agencies first determine their human resource needs using the staffing norms and establishment levels. The agencies submit their request to MoH which obtains technical clearance from the Public Services Commission and subsequently procures financial clearance from MoF.

Obtaining financial clearance leads to sourcing of candidates from either regulated professionals or unregulated prospective candidates.

In addition to the above, the process also includes the following steps:

- MoH sources candidates in good standing from regulatory bodies;
- MoH and its agencies meet to discuss quotas for distribution;
- Decisions are inputted into the MoH recruitment portal to guide applicants;
- **C**andidates apply through the MoH recruitment portal;
- **A**gencies initiate the recruitment process (advert, shortlisting, interview selection and placement);
- **A**gencies submit the list of candidates who accepted their placement to MoH for hologram; and
- **S**alaries are processed upon receipt of the hologram.

All the steps enumerated above apply to the regulated professionals. However, step A does not apply to non-regulated health workers. Overall, it takes about 12 months to fill a vacant post in a regulated health worker category and over 12 months for a non-regulated category.

3.6 ATTRACTIVENESS AND IMPORTANCE OF HEALTH SECTOR EMPLOYMENT COMPARED WITH OTHER SECTORS

3.6.1 Health sector's contribution to GDP

According to the 2022 Labour force survey report, health employment was about 155 806 accounting for 1.5% of employment across all sectors. In comparison, the health sector employed more workers than the mining sector (129 198 or 1.2% of total employment). However, health employment was relatively small compared to education (470 433 or 4.4%), construction (484 838 or 4.5%), and well-known high-volume employment areas such as trade (20.8%) and agriculture (38.4%) (Fig. 17). The health and social subsector's GDP has been growing steadily from 5.9% in 2020 to 11.9% in 2023, which was the second-highest growth rate after telecommunications. Since 2014, the health and social sector's GDP growth has been consistently above 4% annually. The growing contribution of these subsectors to GDP suggests that they play an increasingly significant role in the overall economy. It also suggests that the health sector is becoming a more substantial contributor to the country's economic output and development.

The expansion in health employment has translated into increased health expenditure although the general levels of health investment remain suboptimal. The general government health expenditure in Ghana was approximately 1.34% of the GDP in 2018, which increased gradually to 1.38% in 2019 and 2% in 2020. The 0.62% increase in 2022 is arguably attributed to the influx of investments in the health sector to respond to the COVID-19 pandemic.

The observed expansion of the health sector GDP suggests opportunities to utilize the available health workforce as well as the potential need to increase workforce capacity as the sector expands. However, additional information is paramount regarding budget space availability amidst a tight fiscal environment from the government and regulatory and financial incentive to stimulate private sector employment of the HWF.

Although health sector employment compares fairly to the education, accommodation and food service, construction, transport and storage sectors, it may not be a high-volume employment sector as manufacturing and other bigger sectors. However, when it comes to the quality of jobs and remuneration, the factors may favour the health sector as all other sectors rely on the effectiveness of health sector interventions to maintain a healthy workforce. Fig. 17 below illustrates the relative importance of each sector in terms of employment compared to others. Job status, quality, and remunerations among other factors influence the attractiveness of employment in the sector.

Main industry	Total - Both sexes	Total - Male	Total - Female	Urban - Both sexes	Urban - Male	Urban - Female	Rural - Both sexes	Rural - Male	Rural - Female
All Industry	10656305	4956239	5674085	5862619	2631003	3231609	4793668	2351210	2442675
Agriculture, forestry and fishing	4090699	2918169	1908540	983477	653123	330354	3107222	1635046	1468184
Mining and quarrying	129198	111563	17635	52525	48104	4421	76673	63459	13105
Manufacturing	1086176	378672	707499	747251	287145	460206	338819	91527	247134
Electricity, gas, stream and air conditioning supply	26372	19874	6487	20141	15035	5106	6231	5839	392
Water supply, sewerage, waste management	33711	24174	9537	18485	9930	8556	15226	14244	982
Construction	484834	482022	2812	434738	431885	2853	50096	50137	0
Wholesale and retail trade	2211623	491890	1720733	1719623	403131	1316792	491700	88759	403011
Transportation and storage	480297	466221	14075	374358	359512	14846	105939	106709	0
Accommodation and food service activities	512550	463313	49237	374368	332292	42076	138182	131021	7131
Information and communication	31157	24352	6805	25497	18692	5805	5659	5660	0
Financial and insurance activities	105669	58541	47128	61236	13464	47792	44433	45077	356
Real estate activities	8183	6445	1738	7567	5667	1900	616	778	0
Professional, scientific and technical activities	78164	46648	31516	51906	34255	17651	26258	12393	13865

Administrative and support service activities	103282	70241	33041	82612	51413	31199	20670	18828	1836
Public administration and defence	1126931	680664	446267	874576	404997	469579	252355	275667	0
Education	470533	232853	237683	358945	164560	194364	111489	68293	43196
Human health and social work activities	452204	150821	301383	368138	138867	229271	84067	11954	72113
Arts, entertainment and recreation	74580	36774	37806	41055	22114	18941	33525	14660	18865
Other service activities	384731	147107	237324	147107	185249	19931	86484	60347	26137
Activities of households as employers	120802	58750	62010	52550	23301	29249	68252	16796	51456
Activities of extraterritorial Organisations and bodies	821	821	0	821	821	0	0	0	0

Fig. 17: Main industry of currently employed population 15 years and over by locality and sex

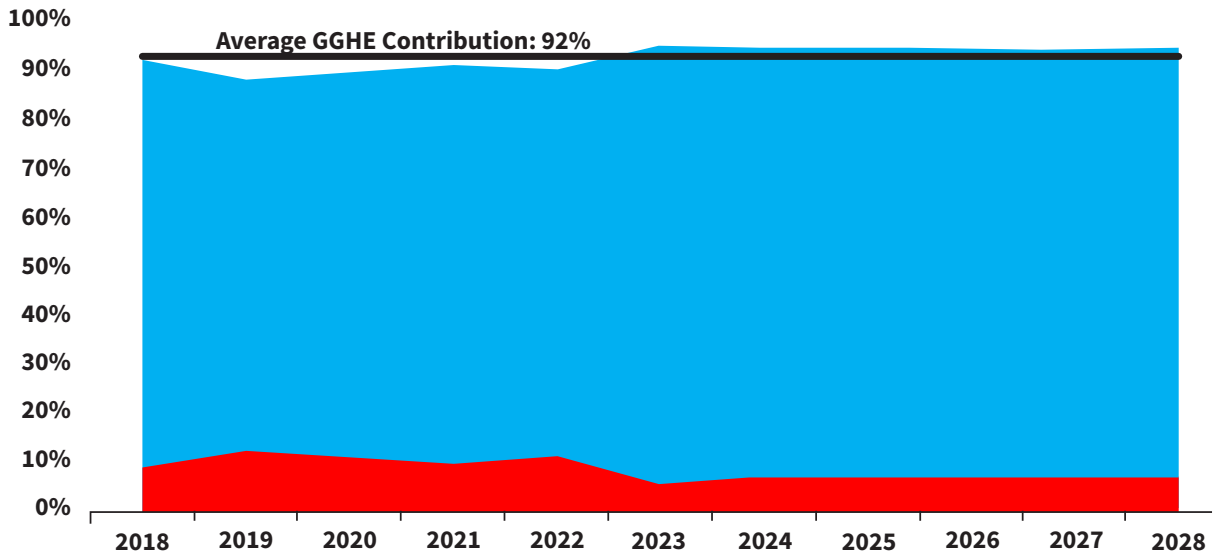
*(**Source:** Ghana Quarterly Labour Force Report 2022 Ghana Statistical Agency)*

3. 7 EXTERNAL DEVELOPMENT ASSISTANCE TO THE HEALTH SECTOR: IMPLICATION FOR HWF

External development assistance (EDA) has over the years been a part of investment in the health sector, but has been dwindling in recent years. In 2018, EDA was around US$ 90 million but rose to US$ 151.79 million by 2022. EDA as a total of GGHE increased from 9.3% in 2018 to 13.18% in 2019. Despite the significant contribution of EDA to health spending, it accounts for only 1.5% of health sector salaries as the bulk of EDA spent on health workforce is used for in-service training.

During the COVID-19 pandemic, EDA decreased by about 2% from 2019 to 2020 and about 1% in 2021. The COVID-19 pandemic stretched health systems across the globe and adversely impacted the donor financing landscape. This can be attributed to the economic downturn and challenges faced by benefactor countries.

Projections from 2023 to 2028 using the moving average method show that the proportional share of health expenditure EDA may decrease to 6.6% by 2028. In this scenario, EDA is expected to decline. As a result, stimulating additional investments from domestic sources (both government and private sector) would be critical to sustain the gains made.



¯(Source:Ministry of finance estimates of expenditure)

Figure 18: GGHE vs Donor Support

4 Hapsatou Toure and others, 'Health expenditure: how much is spent on health and care worker remuneration? An analysis of 33 low- and middle-income African countries', Human resources for health, 21.1 (2023), 96 <https://doi.org/10.1186/s12960-023-00872-y>.

Section 4:

HEALTH WORKFORCE TRAINING AND EDUCATION

4.1 GOVERNANCE OF HEALTH WORKFORCE EDUCATION AND TRAINING

Ghana operates a liberalized health workforce production system where public, private not-for profit and private for-profit institutions contribute. While training from certificate to some degree levels is under the control of MoH, most of those requiring graduate and postgraduate academic training are provided by public and private universities outside the remit of MoH. Specialized postgraduate training colleges for doctors, pharmacists, nurses and midwives have been established to train postgraduate specialists for the country. The establishment of a college for allied health professionals is said to be under discussion.

The programmes offered by the various training institutions are accredited by the Ghana tertiary education commission (GTEC) and the respective health professions regulatory bodies including, the medical and dental council, the nursing and midwifery council, the allied health professions council, the pharmacy council, the Ghana psychology council and the traditional and alternative medicine council. These regulatory bodies are governed by various laws including the education regulatory bodies act, 2020 (Act 1023), the health profession regulatory bodies act, 2013 (Act 857), and the traditional medicine practice council act 2000 (Act 575).

Moreover, training at the postgraduate level is overcentralized and the accreditation regimes have not been effectively enforced.

4.2 HEALTH WORKFORCE EDUCATION CAPACITY AND TRENDS

4.2.1 Overall education capacity of health workforce

In the late 1990s and early 2000s, Ghana experienced a shortage of HWF,

exacerbated by excessive outmigration. Efforts initiated to address the situation include expansion of training of middle cadre professionals, local training for specialist health professionals and incentives for retention. Consequently, Ghana's production of health workers is acknowledged in various reports as one of the highest in the African Region[2].

Despite the progress made, aligning the interests of stakeholders involved in the training ecosystem with the needs of various service delivery agencies has emerged as a challenge. As a result, the country has recorded a growing number of health workers who are facing long periods of unemployment or underemployment. Additionally, there are limited avenues for the training of health professionals for new and emerging service delivery areas. Some post-basic training is also not adequate to address the service delivery needs.

Ghana had 197 programmes being offered across the various health professions in 2022. The programmes were offered by the public and private sectors, and regulated by the following councils: the Nursing and Midwifery Council (58), the Allied Health Professions Council (46), the Psychology Council (34), the Medical and Dental Council (31), and the Traditional Medicine Practice Council (1)

2 World Health Organization. Regional Office for Africa, The nursing and midwifery workforce in the African Region: optimizing and accelerating investments for resilient health systems: a regional technical report (World Health Organization. Regional Office for Africa, 2022) <https://apps.who.int/iris/handle/10665/366121> [accessed 15 February 2023].

The country could **train 78 033 persons across the 197 programmes but utilized an average of 55 548 slots or an overall capacity utilization rate of 71%.** The public sector accounted for about 83.7% of the total capacity, while the private for-profit and private not-for-profit sectors accounted for 9.5% and 6.5% respectively.

The underutilization of training capacity can be attributed to insufficient government budget allocation, leading to inadequate equipment and resources at training institutions. Training capacity is further hampered by a shortage of faculty or tutors.

Each year, about 228 325 applications were received across all training institutions for admission into various health professions training programmes. The nearly 78 033 available capacity means that roughly three candidates were competing for each available training slot. The distribution of applicants by type of training institution, and according to ownership, is as follows: private for-profit institutions represent 4%, public institutions account for 88%, and private non-profit institutions constitute the remaining 8%.

Table 6 outlines the available capacity (seats) in the various programmes. Allied health programmes have a relatively high utilization rate of available seats (74%), with a 55% admission rate for applicants. Despite their fewer seats (n=2340), medical and dental programmes receive an overwhelming number of applicants (n=20 385) but could offer admission to only 11% of them. Similarly, nursing and midwifery programmes, which have the most seats (n = 52 571), can admit only 19% of their large applicant pool of 178 013 per year. However, only 64% of available seats are utilized. The pharmacy and psychology programmes have high utilization rates of 121% and 93% respectively. Pharmacy admitted 22% of applicants while psychology admitted 70%. The analysis indicates that demand for training is generally high and capacity varies across health programmes.

Table 6: Capacity of Programmes Relative to Application, Admissions and Outputs

Regulatory body	No. of seats available	Annual No. applicants	Annual No. admitted	No. graduated	Applicant to seat ratio	% of applicants admitted	% of available utilized
Allied health programmes	12 677	17 093	9443	6698	1.35	55%	74%
Medical & dental programmes	2340	20 385	2335	1877	8.71	11%	100%
Nursing & midwifery programmes	52 571	178 013	33 621	24 857	3.39	19%	64%
Pharmacy programmes	5939	6814	5939	768	1.15	87%	100%
Psychology programmes	4506	6020	4210	2463	1.34	70%	93%
Grand total	78 033	228 325	55 548	36 663	2.93	24%	71%

In 2022, there were 228 325 applications for consideration into various health related programmes. Of this, only 55 548 or 24.34% were admitted into respective programmes. This low applicant-to-admission ratio could be attributed to factors such as inadequate faculty and infrastructure, multiple applications from the same applicants, and government policy on admissions quota (numerus clausus). In the same year, 36 663 graduated from various institutions. Table 6 provides a comprehensive description of admissions and graduations of health professionals from different training institutions in 2022.

Table 7: Overall applications, admissions and graduations in 2022

S/No.	Professional groups	Annual overall applications	Number admitted	Number graduated
1	Allied health	17 093	9443	6698
2	Medical & dental	20 385	2335	1877
3	Nursing & midwifery	178 013	33 621	24 857
4	Pharmacy	6814	5939	768
5	Psychology	6020	4210	2463
	Total	228,325	55 548	36 663

(Source: Health regulatory bodies,2023)

4.2.2 Education of nurses and midwives

The nursing and midwifery workforce in Ghana is trained by public, faith-based and private institutions which award end-of-course certificates, diplomas, and degrees. Of the 134 health training institutions in Ghana that train both nurses and midwives, 72.4% are publicly funded and 27.6% privately funded. Table 8 presents detailed information on the analysis of nursing and midwifery production.

Table 8: Number of nursing and midwifery training colleges

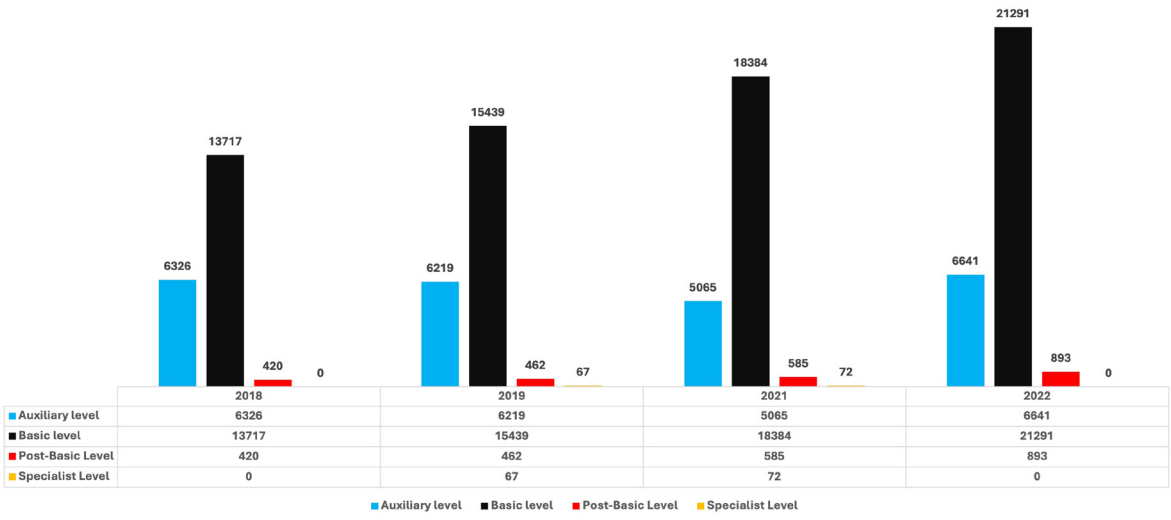
Ownership	Preservice	Post-basic	Degree	Nursing & midwifery specialization	Total
Public	83	7	6	1	97
Private	18	0	19	0	37
Total	101	7	25	1	134

NB: The public institutions include faith-based institutions.

¯(Source: Ministry of health and the Nursing and midwifery council,Ghana (2023))

Fig. 19 provides a summary of trends in the education of different categories of the nursing workforce covering the period from 2018 to 2022 (noting that there was no output for 2020 due to disruptions by the COVID-19 pandemic). As a policy, the government is gradually reducing the number of nurse associates while increasing those of professionals. Consequently, the training output for professional nurses increased by 55% within five years from 13 717 in 2018 to 21 291 in 2022 (an average of 11% increase in the education of professional nurses per year). There was a tremendous increase in the education of professional nurses and midwives between 2018 and 2022. The different cadres under each of the levels are also indicated in Box 2.

Fig. 19: Trends of nursing and midwifery cadres from 2018 to 2022



¯*(Source:Nursing and midwifery council (Data collected for 2023 HLMA))*

BOX 2: LEVELS OF NURSING AND MIDWIFERY CADRES

a. Auxiliary level cadres (nurse associate)

- nurse assistant clinical (NAC);
- nurse assistant preventive (NAP);

b. Basic level cadres (professional):

- registered general nurse;
- registered midwife;
- registered mental nurse;
- registered public health nurse;
- registered paediatric nurse;
- registered community mental nurse.

c. Post-basic level cadre (specialist):

- public health nurse (PHN);
- critical care nurse (CCN);
- perioperative nurse (PON);
- ophthalmic nurse (OPN);
- nurse practitioner (NP);
- emergency nurse; and
- paediatric nurse;

On average, 18 562 nurses and midwives graduated each year within the period, with registered general nurses recording the highest number of graduates (6634 average). On average, 4188 enrolled nurses and 3508 registered nurses graduated every year. In 2020, only 60 nurse specialists graduated among all cadres. Table 9 presents the trend of newly qualified nursing and midwifery cadres from 2018 to 2022.

Table 9: Trend of nursing and midwifery cadres graduated (newly qualified)

	Cadres	Number of cadre graduated per year				Average graduated per year	% of 2018	% of 2019	% of 2021	% of 2022
		2018	2019	2021	2022					
1	Enrolled nurse	3250	3850	4576	5075	4188	17.4	23.2	25.9	23.9
2	Community health nurse	1742	1872	2471	2897	2246	9.3	11.3	14	13.6
3	Registered general nurse	7683	6398	5894	6561	6634	41	38.6	33.3	30.8
4	Registered midwife	3947	3000	2767	4318	3508	21.1	18.1	15.6	20.3
5	Registered mental nurse	374	350	347	378	362	2	2.1	2	1.8
6	Registered public nurse	1334	744	1136	1549	1191	7.1	4.5	6.4	7.3
7	Registered community mental nurse	-	50	69	88	52	0	0.3	0.4	0.4
8	Critical care nurse	72	68	98	88	82	0.4	0.4	0.6	0.4
9	Perioperative nurse	80	76	98	88	86	0.4	0.5	0.6	0.4
10	Ophthalmic nurse	68	59	91	95	78	0.4	0.4	0.5	0.4
11	Ear, nose & throat	57	-	-	-	14	0.3	0	0	0
12	Nurse specialist	34	40	79	70	56	0.2	0.2	0.4	0.3
13	Public health nurse	48	-	-	-	12	0.3	0	0	0
14	Nurse practitioner	40	58	55	64	54	0.2	0.4	0.3	0.3
	Total	18 729	16 565	17 681	21 271	18 562	100	100	100	100

In terms of composition, registered nurses alone account for 35.9% of all the graduates, while enrolled nurses represent 22.6%, and registered midwives and community health nurses represent 18.8% and 12.1%, respectively. Other categories of nurses account for 10.7% of total graduates (Fig. 20).

(Source: Nursing and Midwifery Council (Data collected for 2023 HLMA))

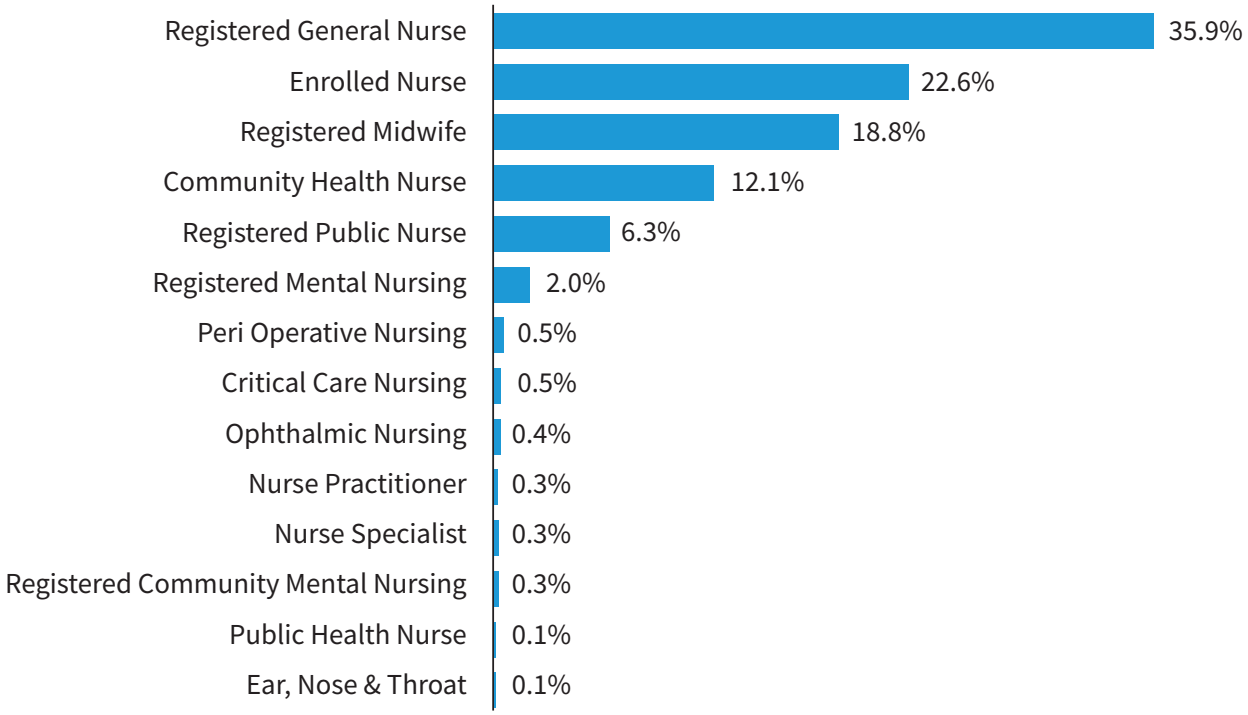


Fig. 20: Percentage of graduated cadres by category from 2018 to 2022

(Source:) Nursing and midwifery council (Data collected for 2023 HLMA)

Table 5 shows the number of members (specialists) and associate members who qualified for various programmes in 2022. More specialist nurses (n=292) qualified than associate nurses (n = 86) and most of the qualified associate nurses (n=33) and specialist nurses (n=48) were from paediatric nursing programmes. More associate nurses also qualified from neonatal (n=18), emergency nursing (n=14) and paediatric oncology (n=12) programmes. In contrast, more specialist nurses qualified from emergency nursing (n=24), advanced midwifery (n=23), critical care (n=23), and ophthalmic nursing (n=22) programmes.

Table 10: Number of associate members and members (specialist) qualified in 2022

S/ No.	Programme	Associate member	Member (specialist)
1	Neonatal nursing	18	13
2	Paediatric nursing	33	48
3	Well woman care	0	8
4	Neuroscience nursing	0	8
5	Emergency nursing	14	24
6	Nephrology nursing	5	8
7	Oncology nursing	0	15
8	Paediatric oncology	12	0
9	Child mental and adolescent nursing	0	5
10	Orthopaedic nursing	3	16
11	Family health	0	14
12	Infectious disease	1	10
13	Ear, nose & throat	0	16
14	Addiction	0	5
15	Ophthalmic nursing	0	22
16	Haematology nursing	0	8
17	Community mental health & rehabilitation	0	5
18	Advanced midwifery	0	23
19	Palliative care	0	5
20	Critical care	0	23
21	Perioperative	0	16
	Total	86	292

(Source: Ministry of health and the Nursing and midwifery council (data collected for HLMA,2023))

BOX 3: DEFINING MEMBERSHIP AND FELLOWSHIP

Postgraduate specialization colleges offer two main programmes:

membership and fellowship.

- Membership usually consists of a three-year course of training in a specialized area leading to the trainee being admitted as a member of the college. Members are then employed at the entry-level as specialists in their professional areas.
- Fellowship consists of a post membership training programme of at least two years in a specialized or subspecialty area leading to the trainee being admitted as a fellow of the college. Being a fellow alongside relevant work experience enables the specialist to progress to become a consultant.
- Associate membership and diplomas: some colleges, for example, the Ghana College of Nursing and Midwifery offer one-year training for associate membership. Although it provides specialized skills for professionals, they are not recognized as full specialists. Other colleges such as the Ghana College of Physicians and Surgeons provide specialized skills to doctors who may not be accorded full recognition as specialists until they complete the full membership course.

4.2.3 Education of allied health workforce

There are 44 training institutions offering 18 programmes (Box 4) which train allied health professionals. Twenty-four of them 24 (54.5%) are owned by the Government and the remaining 20 (45.5%) are private institutions. It is understood that plans are being considered to establish the Ghana College of Allied Health to train specialists in the allied health disciplines.

BOX 4: HEALTH PROFESSIONAL PROGRAMMES REGULATED BY THE ALLIED HEALTH PROFESSIONS COUNCIL

- There are 18 health professional programmes regulated by the Allied health professions council, namely audiology, community mental health, dietetics, disease control, environmental health, health information and records management, health promotion, medical laboratory science, medical physics, nutrition, occupational therapy, optometry and optics, physiotherapy, radiography & sonography, oral health, respiratory therapy, speech and language therapy, and prosthetics and orthotics.

4.2.4 Education of medical doctors and dentists

Fig. 21 shows the education of medical doctors and dentists from 2018 to 2022. The education of medical doctors and dentists has almost doubled within five years. Between 2018 and 2022, the country produced an average of 989 doctors per year, but the trend shows a significant variation. In the last five years, the number of doctors produced has increased by approximately 80% or an average of 16% per annum.

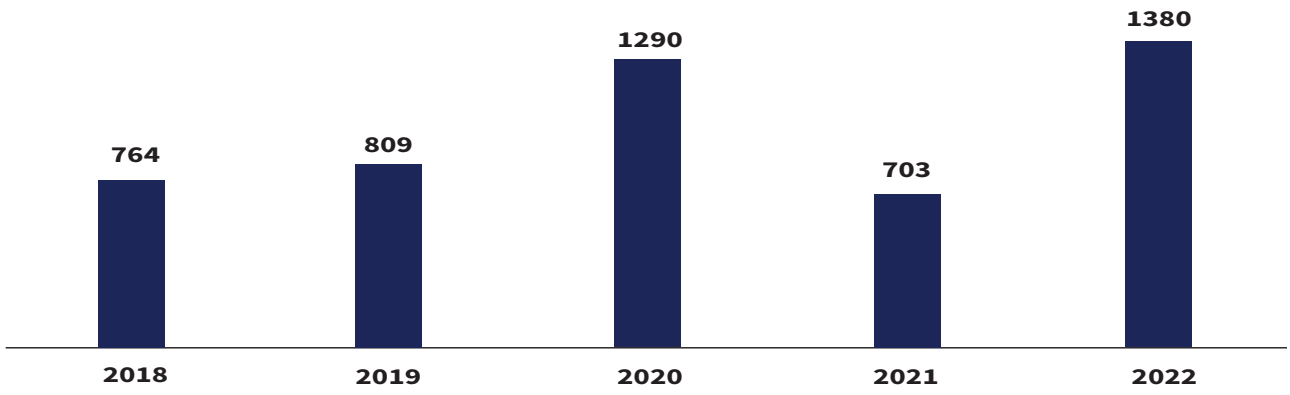


Fig. 21: Trend in the education of doctors (medical and dental, locally trained)

(Source: Medical and dental Council,Ghana)(2023)

The number of medical specialists registered increased by 35% from 761 in 2022 to 1030 in 2023 (Table 11). The highest registrations were recorded for obstetrics and gynaecological specialist programmes in 2022 (n=130) and 2023 (n=199). There were no registrations for some specialist programmes such as community dentistry, oral and maxillofacial radiology, implant dentistry and general dental practice (family dentistry).

Table 11: Number of medical and dental specialists registered in 2022-2023

S No.	Specialist programmes	Number registered	
		2022	2023
1	Anaesthesia	22	27
2	Emergency medicine	22	28
3	Family medicine	69	86
4	Internal medicine	108	127
5	Laboratory medicine	16	22
6	Obys & gynae	130	199
7	Oncology & radiation therapy	13	12
8	Ophthalmology	26	45
9	Oral & maxillofacial surgery	17	19
10	Oral medicine	1	1
11	Oral pathology	2	4
12	Orthodontics	13	20

S No.	Specialist programmes	Number registered	
		2022	2023
13	Otorhinolaryngology	16	18
14	Paediatrics & child health	93	117
15	Periodontics (child dental)	4	4
16	Periodontics	4	4
17	Psychiatry	10	22
18	Public health dentistry	1	1
19	Public health medicine	51	72
20	Radiology	18	28
21	Restorative dentistry	16	20
22	Surgery	109	154
23	Community dentistry	0	0
24	Oral and maxillofacial radiology	0	0
25	Implant dentistry	0	0
26	General dental practice (family dentistry)	0	0
	Total	761	1030

4.2.4.1 Training output for medical doctors and dentists

Medical doctors and dentists are trained both locally and internationally. Locally, six public universities and three private university colleges provide this training. The duration for the direct entry is six years, while the graduate entry (science related programmes) is four years. As of 2022, there were six public medical schools and three private schools with a total output of 1260. In addition, 254 out of the 552 foreign-trained doctors qualified. The pass rate for locally trained doctors for licensure examination for 2022 was 89%, while that for the foreign-trained was 46%.

BOX 5: POSTGRADUATE PROGRAMMES OFFERED BY GCPS AND WACPS

Postgraduate medical training for medical doctors and dentists is provided by the Ghana College of Physicians and Surgeons (GCPS) and the West Africa College of Physicians and Surgeons (WACPS). The programmes offered include anaesthesia, emergency medicine, family medicine, internal medicine, laboratory medicine/pathology, obstetrics and gynaecology, ophthalmology, otorhinolaryngology, paediatrics and child health, public health medicine, psychiatry, radiology, oncology and radiation therapy, surgery, restorative dentistry, oral medicine, oral pathology, orthodontist, pedodontics (child dental health), periodontics, public health dentistry, community dentistry, oral and maxillofacial surgery, oral and maxillofacial radiology, implant dentistry and general dental practice (family dentistry).

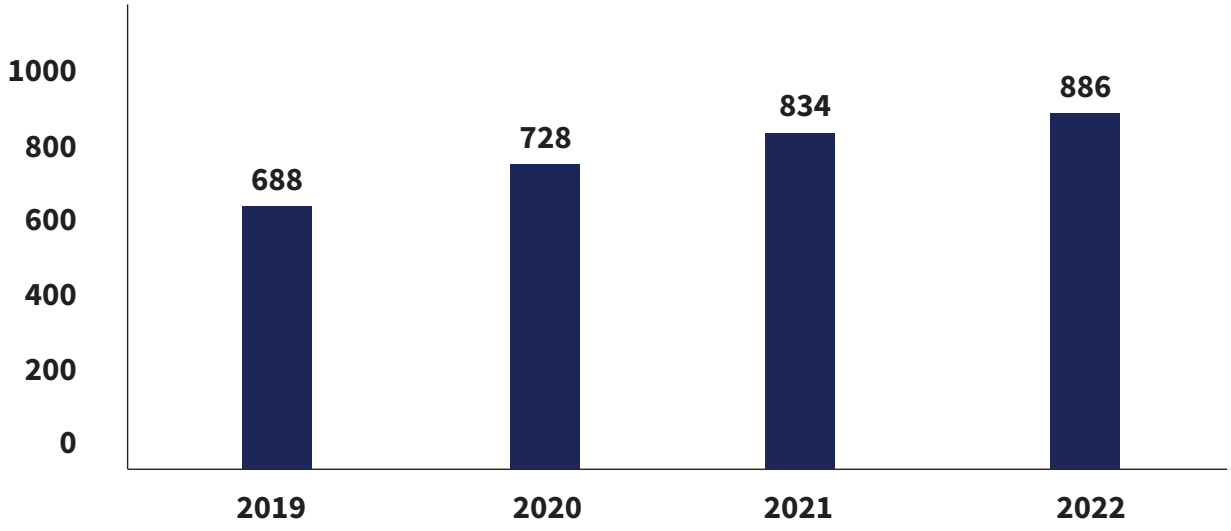
4.2.4.1Cost of training for medical doctors and dentists

In Ghana, the cost of training for "regular" medical and dental students in public medical schools is absorbed by the government. "Fee-paying" medical and dental students pay an average of 8247.00 Ghana cedis annually. The average cost of training for medical and dental students trained in private schools is US$ 10 200 annually. The annual cost of training for medical and dental trainees from West Africa and other African countries is US$ 9017. Medical and dental students from other parts of the world who are trained in Ghana pay an annual tuition of US$ 12 223.

4.2.5 Education of physician assistants

The training output of physician assistants shows a steadily increasing trend between 2019 and 2022 (28% increase). Within four years, a total of 3137 physician assistants were produced. The annual education of physician assistants increased from 688 in 2019 to 886 in 2022, resulting in an overall increase of 28.8% or a 7.2% average annual increase. Fig. 22 presents the trend in the education of physician assistants from 2019 to 2022.

Fig. 22: Trend of education of physician assistants, 2019–2022



(Source:) MoH and Allied health professions council

Table 12 shows the trend in registration of allied health professionals between 2018 and 2022. Results show there was a progressive increase in the number of allied health professionals registered by the Council, making a 20% average increment of allied health professionals over five years (2018– 2022).

Table 12: Trend in registration of allied health professionals

S/ No.	Profession	Number registered				
		2018	2019	2020	2021	2022
1	Community mental health	81	107	130	267	280
2	Diagnostic radiography	31	34	72	158	185
3	Sonography	18	15	83	147	157
4	Dietetics	74	63	65	69	177
5	Disease control	345	272	275	280	437
6	Environmental health	59	80	73	143	331
7	Health information	133	278	266	361	446
8	Optometry	73	251	273	395	305
9	Medical laboratory science	665	1078	1069	1403	1525
10	Nutrition	531	379	335	512	548
11	Occupational therapy	12	6	30	22	32
12	Physiotherapy	40	68	55	58	67
13	Dental surgery	0	64	60	72	78
14	Audiology	0	0	21	13	25
15	Speech & language therapy	0	10	12	13	18
16	Medical physics	1	7	7	12	14
17	Health promotion	0	148	266	295	275
18	Prosthetics & orthotics	0	11	12	13	13
	Total	2063	2871	3104	4233	4913

(Source:) MoH and Allied health professions council

4.2.6 Education of pharmacists and pharmacy technicians

BOX 6: TRAINING OF SPECIALIST PHARMACISTS

The Ghana College of Pharmacy trains specialists in various disciplines including cardiology, endocrinology, nephrology, gastroenterology, paediatrics, infectious diseases, maternal health, respiratory, critical care, haematology, obstetrics and gynaecology, infectious diseases and dermatology, psychiatry, surgery, eye, oncology, cardiovascular and renal, palliative care, emergency, urology, public health, social and administration, quality assurance, drug and herbal medicine discovery, development and production, community and family practice. However, at the time of analysis, there was no data on the trend of specialist pharmacists training output.

4.2.6.1 Enrolment into pharmacy schools

Table 13 shows the enrolment in pharmacy schools between 2018 and 2023. Over the years, there has been an increasing trend in the admissions to pharmacy schools, albeit with variations in the yearly trends; the average is 32% over five years (2018 -2023). The Kwame Nkrumah University of Science and Technology (KNUST) has the highest share of total admissions (1939 or 38%) over the period. In less than five years, the Catholic University (CU) – a privately owned institution – rapidly increased the number of admissions by an average of 17.5% over the period. Table 13 shows that, on average, all the pharmacy schools exceeded their annual quota allocation on admission.

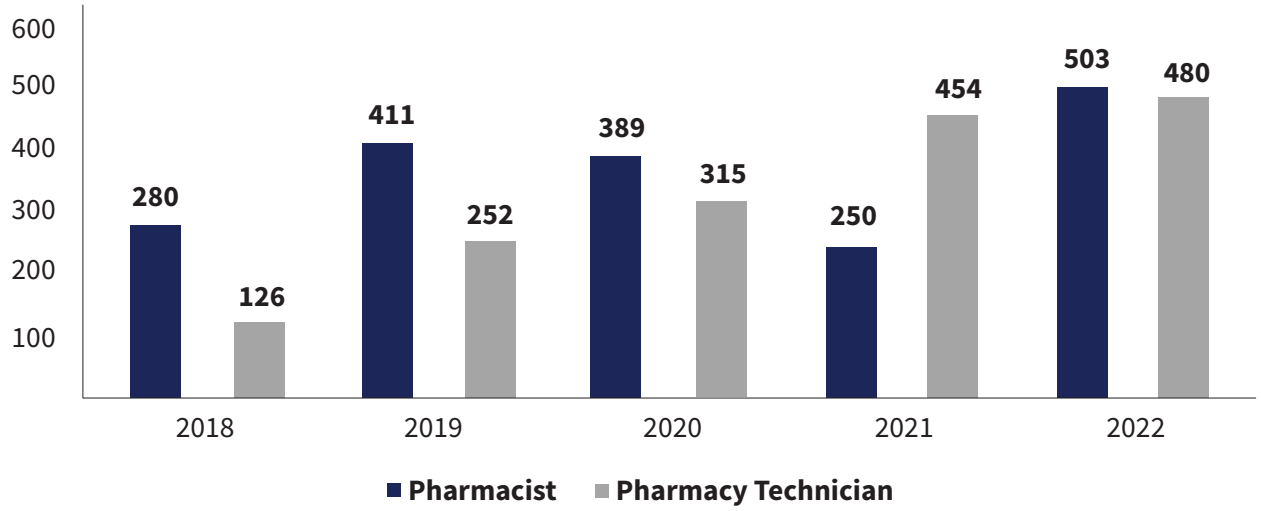
Table 13: Enrolment into pharmacy schools

Pharmacy schools										
Quota assigned per year		300	100	100	75	100	150	50	875	Percentage increase
Adm year	Level	KNUST	UGSOP	CU	UHAS	UDS	UCC	Entrance	Total	
2023	100	379	134	249	129	277	133	72	1373	37%
2022	200	324	75	146	73	228	103	54	1003	3%
2021	300	354	107	165	52	177	78	43	976	36%
2020	400	251	73	131	45	109	48	60	717	16%
2019	500	305	66	120	39	50	-	38	618	70%
2018	600	326	-	-	37	-	-	-	363	
Total admission by institution 2018–2023		1939	455	811	375	841	362	267	5050	
Share of admission by institution 2018–2023		38%	9%	16%	7%	17%	7%	5%		

4.3.3.1 Graduates from pharmacy schools

Within the last five years, Ghana has doubled the number of pharmacists trained and almost quadrupled the number of pharmacy technicians. Fig. 23 depicts the workforce of pharmacists and pharmacy technicians from 2018 to 2022. The number of pharmacists increased significantly from 280 in 2018 to 503 in 2022, representing a nearly 80% growth rate. However, this growth was not consistent, with a significant drop in 2021. Pharmacy technicians have steadily increased from 126 in 2018 to 480 in 2022, a growth rate of approximately 281%. Pharmacist specialists' data remained constant at zero throughout the period, indicating no presence or recruitment in this category.

Fig. 23: Trend of annual output of pharmacists and pharmacy technicians



Source: MoH and Pharmacy Council

4.3.4 Cost of health worker training in Ghana

4.3.4.1 Tuition fee

Private for-profit institutions have an average tuition fee of 8759.82. However, in public and private not-for-profit institutions, the government absorbs the tuition fee. Table 14 shows the average tuition fee per health professional category per year in private health training institutions.

Table 14: Private for-profit average tuition fee per category per year (in Ghana Cedis)

Health occupations	Private for-profit
Allied health	7000
Certified registered anaesthesiologist	
Community health nurse	
Dental	
Medical laboratory assistant	5500
Medical laboratory scientist	7000
Medical laboratory technician	6400
Nurse assistant	4000
Nurse/midwife	6797
Pharmacy	
Physician assistants	7000

4.3.4.2: Facility user and feeding fees

Table 15 shows the yearly facility user fee per student in private not-for-profit and public institutions. The average user fee and feeding in public institutions is 12 436.37 per annum. The average user fee, accommodation, and feeding for private not-for-profit institutions is 17 156.91.

Table 15: Average user fee per category per year and ownership (in Ghana cedis)

Health occupations	Private not-for-profit	Public	Average
Allied health		4903	4903
Certified registered anaesthetist		3000	3000
Community health nurse		20 316	20 316
Dental		8650	8650
Medical laboratory assistant		23 031	23 031
Medical laboratory scientist		5705	5705
Medical laboratory technician		10 177	10 177
Nurse assistant	15 016	21 395	18 205
Nurse/midwife	16 852	16 869	16 860
Pharmacy		24 213	24 213
Physician assistants	7000	6131	6565

4.3 CURRENT STOCK AND SUPPLY TRENDS OF HEALTH WORKERS

BOX 7: DEFINITION OF STOCK AND SUPPLY

The stock of health workers refers to the total number of health workers who are qualified or registered to work in Ghana, regardless of whether they are currently employed or not. This includes the supply of health workers, which refers to the number of health workers who are available and willing to work at the given wage rates. The supply of health workforce is thus a sum of those who are employed and those who are unemployed but looking for work.

4.3.1 Current stock and supply

As of 2022, Ghana had about 298 382 qualified health workers, but almost 40% of them were unemployed. The total estimated stock of health workers in Ghana in 2022 was 298 382, distributed across 67 different categories of health care professions. Out of this total, 294 389 (99%) were actively participating in the labour market (thus, they were either employed or looking for jobs). About 57.9% were employed in the public sector – government (n = 172 630), with less than 1% in the private sector (only 3,271).

However, it was noted that the private sector data was incomplete owing to difficulties in collecting data from all individual private institutions in the absence of a repository for the private sector. Additionally, some public sector workers are engaged in dual practice in the private sector. An estimated 118 488 (39.7%) of qualified health workers in the labour market were unemployed. Table 16 provides details of the stock of health workers across 67 occupations including their employment status and population density as of 2022.

Limitation: The number of prioritized cadres for the demand category was 67 against the need category, because of the paucity of data for two missing professionals; the disease burden showed the need for those professionals.

Table 16: Current stock and supply of health workers in 2022

SNo.	Occupational title used in the country	Equivalent ISCO classification	Stock of qualified health workers, (P)	Number employed in the public sector (EnPb)	Employed in private sectors (EnPr)	Number unemployed (U)	Out-of -labour force (OLF)	Health labour market participation rate [(EnPb+EnPr +U)/P]	Estimated unemployment rate [U/P]	Effective supply (S)
HW1	Audiologist	2266 - Audiologists and speech therapists	61	16	1	43	1	98%	70%	60
HW2	Biomedical engineer	2149 - Engineering professionals not elsewhere classified	244	244		0	0	100%	0%	244
HW3	Certified registered	2269 - Health professionals not elsewhere classified	950	904	39	0	7	99%	0%	943
HW4	Clinical psychologist	2634 – Psychologists	283	64	1	218	0	100%	77%	283
HW5	Community health nurse	3221 - Nursing associate professionals	40 663	18 820	65	21 680	98	100%	53%	40 565
HW6	Dental prosthetic technologist	3251 - Dental assistants and therapists	873	137		736	0	100%	84%	873
HW7	Dental surgeon	2261 – Dentists	202	197	5	0	0	100%	0%	202
HW8	Dental surgery technician	3251 - Dental assistants and therapists	677	500	4	172	1	100%	25%	676
HW9	Dietitian	2265 - Dieticians and nutritionists	553	223	7	323	0	100%	58%	553

SNo.	Occupational title used in the country	Equivalent ISCO classification	Stock of qualified health workers, (P)	Number employed in the public sector (EnPb)	Employed in private sectors (EnPr)	Number unemployed (U)	Out-of -labour force (OLF)	Health labour market participation rate [(EnPb+EnPr +U)/P]	Estimated unemployment rate [U/P]	Effective supply (S)
HW10	Disease control	2269 - Health professionals not elsewhere classified	3920	3916	4	0	0	100%	0%	3920
HW11	Emergency medical technician	3258 - Emergency medical personnel	3772	3472	0	0	300	92%	0%	3472
HW12	Enrolled nurse	3221 - Nursing associate professionals	55 676	37 278	478	17 867	53	100%	32%	55 623
HW13	Environmental health officer	2263 - Environmental and occupational health and hygiene professionals	1421	1421		0	0	100%	0%	1421
HW14	Environmental health technician	3257 - Environmental and occupational health inspectors and associates	3357	3357		0	0	100%	0%	3357
HW15	Health promotion officer	2269 - Health professionals not elsewhere classified	1542	1275		266	1	100%	17%	1541
HW16	Hospital equipment technician	2149 - Engineering professionals not elsewhere classified	42	42		0	0	100%	0%	42
HW17	Hospital equipment technologist	2149 - Engineering professionals not elsewhere classified	86	82			4	95%	0%	82

SNo.	Occupational title used in the country	Equivalent ISCO classification	Stock of qualified health workers, (P)	Number employed in the public sector (EnPb)	Employed in private sectors (EnPr)	Number unemployed (U)	Out-of -labour force (OLF)	Health labour market participation rate [(EnPb+EnPr +U)/P]	Estimated unemployment rate [U/P]	Effective supply (S)
HW18	Medical laboratory scientist	3212 - Medical and pathology laboratory technicians	4227	2584	96	1544	3	100%	37%	4224
HW19	Medical laboratory scientist specialist	3212 - Medical and pathology laboratory technicians	0	0		0	0			
HW20	Medical laboratory technician	3212 - Medical and pathology laboratory technicians	3748	2717	313	703	15	100%	19%	3733
HW21	Medical officer	2211 - Generalist medical practitioners	3481	3327	151	0	3	100%	0%	3478
HW22	Medical physicist	3211 - Medical imaging and therapeutic equipment technicians	67	52		15	0	100%	22%	67
HW23	Medical social worker	1344 - Social welfare managers	116	116	0	0	0	100%	0%	116
HW24	Medical specialist -	2212 - Specialist medical practitioners	258	155		103	0	100%	40%	258
HW25	Medical specialist - clinical oncologist	2212 - Specialist medical practitioners	39	39		0	0	100%	0%	39

SNo.	Occupational title used in the country	Equivalent ISCO classification	Stock of qualified health workers, (P)	Number employed in the public sector (EnPb)	Employed in private sectors (EnPr)	Number unemployed (U)	Out-of -labour force (OLF)	Health labour market participation rate [(EnPb+EnPr +U)/P]	Estimated unemployment rate [U/P]	Effective supply (S)
HW26	Medical specialist - emergency medicine	2212 - Specialist medical practitioners	73	73		0	0	100%	0%	73
HW27	Medical specialist - ENT surgeon	2212 - Specialist medical practitioners	27	27		0	0	100%	0%	27
HW28	Medical specialist - family medicine	2212 - Specialist medical practitioners	176	173		0	3	98%	0%	173
HW29	Medical specialist - general surgeon	2212 - Specialist medical practitioners	599	357		233	9	98%	39%	590
HW30	Medical specialist - obstetrician & gynaecologist	2212 - Specialist medical practitioners	457	453		0	4	99%	0%	453
HW31	Medical specialist -	2212 - Specialist medical practitioners	96	93		0	3	97%	0%	93
HW32	Medical specialist - orthopaedic surgeon	2212 - Specialist medical practitioners	58	58		0	0	100%	0%	58

SNo.	Occupational title used in the country	Equivalent ISCO classification	Stock of qualified health workers, (P)	Number employed in the public sector (EnPb)	Employed in private sectors (EnPr)	Number unemployed (U)	Out-of -labour force (OLF)	Health labour market participation rate [(EnPb+EnPr +U)/P]	Estimated unemployment rate [U/P]	Effective supply (S)
HW33	Medical specialist - paediatrician	2212 - Specialist medical practitioners	291	287		0	4	99%	0%	287
HW34	Medical specialist - pathologist	2212 - Specialist medical practitioners	28	28			0	100%	0%	28
HW35	Medical specialist - physician	2212 - Specialist medical practitioners	561	303	254	0	4	99%	0%	557
HW36	Medical specialist - plastic surgeon	2212 - Specialist medical practitioners	22	22			0	100%	0%	22
HW37	Medical specialist - psychiatrist	2212 - Specialist medical practitioners	90	89		0	1	99%	0%	89
HW38	Medical specialist - public health	2212 - Specialist medical practitioners	182	180			2	99%	0%	180
HW39	Medical specialist - radiologist	2212 - Specialist medical practitioners	106	105		0	1	99%	0%	105
HW40	Midwife	2222 - Midwifery professionals	40 700	25 504	552	14 193	451	99%	35%	40 249
HW41	Midwife specialist	2222 - Midwifery professionals	0	0			0			

SNo.	Occupational title used in the country	Equivalent ISCO classification	Stock of qualified health workers, (P)	Number employed in the public sector (EnPb)	Employed in private sectors (EnPr)	Number unemployed (U)	Out-of -labour force (OLF)	Health labour market participation rate [(EnPb+EnPr +U)/P]	Estimated unemployment rate [U/P]	Effective supply (S)
HW42	Nurse specialist	2221 - Nursing professionals	168	166			2	99%	0%	166
HW43	Nurse specialist - critical care/ emergency	2221 - Nursing professionals	1001	238		736	27	97%	74%	974
HW44	Nurse specialist – ENT	2221 - Nursing professionals	683	377		306	0	100%	45%	683
HW45	Nurse specialist - mental health	2221 - Nursing professionals	16 549	8228	3	8085	233	99%	49%	16 316
HW46	Nurse specialist - neonatology	2221 - Nursing professionals	0	0			0			
HW47	Nurse specialist - ophthalmic	2221 - Nursing professionals	1228	170	5	1053	0	100%	86%	1228
HW48	Nurse specialist - paediatric	2221 - Nursing professionals	800	36	2	762	0	100%	95%	800
HW49	Nurse specialist - perioperative	2221 - Nursing professionals	1023	329		686	8	99%	67%	1015
HW50	Nutrition officer	2265 - Nutrition and diet therapist	2768	1581	5	1176	6	100%	42%	2762

SNo.	Occupational title used in the country	Equivalent ISCO classification	Stock of qualified health workers, (P)	Number employed in the public sector (EnPb)	Employed in private sectors (EnPr)	Number unemployed (U)	Out-of -labour force (OLF)	Health labour market participation rate [(EnPb+EnPr +U)/P]	Estimated unemployment rate [U/P]	Effective supply (S)
HW51	Occupational therapist	2269 - Occupational therapist	108	83		25	0	100%	23%	108
HW52	Occupational therapy assistant	3257 - Environmental and occupational health inspectors and associates	0	0			0			
HW53	Optometrist and optician	2267 - Optometrists and ophthalmic opticians	1676	337	20	1318	1	100%	79%	1675
HW54	Pharmacist	2262 - Pharmacists	5658	1419	45	4189	5	100%	74%	5653
HW55	Pharmacist specialist	2262 - Pharmacists	78	72		5	1	99%	6%	77
HW56	Pharmacy technician	3213 - Pharmaceutical technicians and assistants	2717	1758	76	875	8	100%	32%	2709
HW57	Physician	2212 - Specialist medical practitioners	2601	2343	258		0	100%	0%	2601
HW58	Physician assistant (COHO)	3256 - Medical assistants	55	55			0	100%	0%	55
HW59	Physiotherapist	2264 - Physiotherapists	562	282	6	274	0	100%	49%	562
HW60	Physiotherapy technician	3255 - Physiotherapy technicians and assistants	409	240	4	165	0	100%	40%	409

SNo.	Occupational title used in the country	Equivalent ISCO classification	Stock of qualified health workers, (P)	Number employed in the public sector (EnPb)	Employed in private sectors (EnPr)	Number unemployed (U)	Out-of -labour force (OLF)	Health labour market participation rate [(EnPb+EnPr +U)/P]	Estimated unemployment rate [U/P]	Effective supply (S)
HW61	Prosthetics and orthotics technician	3214 - Medical and dental prosthetic technicians	110	38		72	0	100%	65%	110
HW62	Public health nurse	2221 - Nursing professionals	10 749	97		10 576	76	99%	98%	10 673
HW63	Radiographer therapy/diag-nostics	3211 - Medical imaging and therapeutic equipment technicians	843	256	71	516	0	100%	61%	843
HW64	Registered general nurse / State registered nurse	2221 - Nursing professionals	78 735	45 703	806	29 568	2658	97%	38%	76 077
HW65	Respiratory therapist	3259 - Health associate professionals not elsewhere classified	21	16		5	0	100%	24%	21
HW66	Speech and language therapist	2266 - Audiologists and speech therapists	50	50		0	0	100%	0%	50
HW67	Technical officer (X-ray)	3211 - Medical imaging and therapeutic equipment technicians	66	66		0	0	100%	0%	66
		Total	298 382	172 630	3271	118 488	3993	99%	39.7%	294 389

4.3.2 Distribution of health workforce by category

Of the 298 302 health workers qualified to practice in Ghana in 2022, nursing professionals constituted 110 936 (37.19%), midwifery 40 700 (13.64%), and associate nursing (community health nurse and enrolled nurse) 96 339 (32.30%).

Most medical doctors practicing in Ghana are specialists for a disease burden that largely requires generalists' interventions. The total number of medical doctors and dentists was 9347 (3.13%) of the total health workforce. Among them, 5664 (60.60%) were specialists, 3481 (37.24%) were generalists medical practitioners and 202 (2.16%) were dentists. In contrast, in 2017, generalist practitioners made up 55% of the medical workforce while the rest were specialists, compared to African Region's average of 27% specialists (WHO, 2021). Put in the international context, only 1 in 3 of UK medical doctors were specialists in 2022 (Statista.com, 2022).

The total nursing workforce stock of 207 231 was made up of 78 735 (38%) registered general nurses, 55 676 (26.90%) enrolled nurses, 40 663(19.62%) community health nurses, and 16 549 nurses with specialized and other skills, trained by the Ghana College of Nurses and Midwives and other post-basic colleges.

The pharmacy workforce of 8375 consisted of 5658 (67.56%) pharmacists and 2717 (32.44%) pharmacy technicians. Across the allied health professions, the total workforce was 9823, including 4227 medical laboratory scientists (43.03%), 3920 medical laboratory scientists (39.91%), disease control professionals, and 1676 (17.06%) optometrists and opticians.

T4.3.3 rends in the density of health workforce in Ghana, 2015–2022

In 2022, there were 82.75 doctors, nurses and midwives per 10 000 population. In comparison, a density of 22.8 doctors, nurses and midwives was the minimum required to deliver 80% of skilled birth attendance and provide a basic package of services during the Millennium Development Goals (MDG) era that ended in 2015. WHO estimates that a density of 44.5 doctors, nurses, and midwives per 10 000 population is the minimum to make progress towards the median rank attainment of the Sustainable Development Goals (SDGs).

Additionally, the 2023 WHO support and safeguard list establishes a benchmark of 49 doctors, nurses and midwives per 10 000 population below which countries are considered to be in a vulnerable position in terms of HWF. Thus, despite the high level of unemployment, the available health workers in Ghana exceeded the international benchmark as of 2022.

WHO AFRO estimates that across all occupations, excluding management and support staff, a density of 134.23 health workers across 13 major occupational groups is required to attain at least 70% of UHC targets (Ahmat et al, 2022). In comparison, Ghana has 96.03 health workers per 10 000 population which represents 71.5% of the WHO Africa Region's UHC threshold density.

BOX 8: SUMMARY OF WORKFORCE STOCK AND DENSITY

- Ghana's workforce density of 82.75 doctors, nurses, and midwives (including the yet-to-be-employed) exceeds most thresholds indicating good prospects to progress towards UHC and other health objectives.
- Considering only health workers who have been employed, the public sector workforce tripled between 2013 and 2022 (increasing by 31.3% per annum) resulting in a 2.5-fold improvement in the density of health workers from 16.56 to 41.92 per 10 000 population.
- Ghana's density as of 2022 was higher than the 49 doctors, nurses and midwives used as the benchmark for countries included in the WHO's 2023 support and safeguard list (SSL). However, Ghana's UHC index point of 48 is below the threshold of 55 to be removed from the SSL.
- Ghana's density mirrors that of countries with a UHC index above 50. Its UHC index of 48 raises concerns about equitable distribution, effective utilization and productivity of the current workforce, given that a large proportion are not employed.
- Ghana's workforce composition demonstrates an inappropriate skill mix both vertically (within occupations) and horizontally (across occupations).

Public sector employment has tripled in 10 years. In 2013, the public sector employed 41 323 medical doctors, nurses, pharmacists, midwives, and medical laboratory scientists. Within 10 years, this figure increased by 313% representing a 31.3% increase in the public sector employment per year. In the 16 years between 2006 and 2022, Ghana's public sector health workforce density (doctors, nurses, midwives, pharmacists and laboratory scientists) increased from 8.3 to 41.92. In the last 10 years (2013 to 2022), **this workforce density increased 2.5-fold when compared with various thresholds, as shown in Fig. 15.**

Table 17: Trends in the number and densities of health workers employed in the public sector, 1996 - 2022

Year/ Cadre	Doctors		Professional nurses		Pharmacists		Midwives		Enrolled nurses		Community health nurses		Biomedical scientists		Total	
	Number in public sector employment	Density per 10 000	Number in public sector employment	Density per 10 000	Number in public sector employment	Density per 10 000	Number in public sector employment	Density per 10 000	Number in public sector employment	Density per 10 000	Number in public sector employment	Density per 10 000	Number in public sector employment	Density per 10 000	Total number in public sector employment	Density per 10 000
1996	1099	0.68	5728	3.53	192	0.12									7019	4.32
1998	1191	0.70	4947	2.90	228	0.13									6366	3.74
1999	1218	0.70	5168	2.96	217	0.12	1257	0.72	3892	2.23	2496	1.43			14 248	8.17
2002	1200	0.64	4320	2.31	252	0.13	2161	1.15	3850	2.06	2666	1.42			14 449	7.72
2003	1142	0.60	6797	3.54	254	0.13		0.00	3636	1.90	2248	1.17			14 077	7.34
2005	1272	0.63	5793	2.87	292	0.14	2872	1.42	2967	1.47	4920	2.44			18 116	8.97
2006	1471	0.71	5997	2.89	309	0.15	3144	1.51	2307	1.11	3585	1.73	219	0.11	17 032	8.20
2007	1676	0.79	6301	2.95	318	0.15	3117	1.46	2316	1.09	3706	1.74	238	0.11	17 672	8.29
2008	1855	0.85	7283	3.32	342	0.16	3315	1.51	2189	1.00	4650	2.12	285	0.13	19 919	9.09
2009	2033	0.90	7924	3.52	429	0.19	3838	1.71	2004	0.89	6305	2.80	343	0.15	22 876	10.17
2010	2325	1.01	8098	3.51	481	0.21	3780	1.64	1825	0.79	6343	2.75	477	0.21	23 329	10.10
2011	2477	1.04	9777	4.12	534	0.23	4034	1.70	2659	1.12	7596	3.20	566	0.24	27 643	11.66
2012	2463	1.01	11125	4.57	530	0.22	3863	1.59	5350	2.20	9609	3.95	612	0.25	33 552	13.79

2013	2588	1.04	12 245	4.91	574	0.23	4185	1.68	8797	3.53	12 285	4.92	649	0.26	41 323	16.56
2014	3018	1.18	14 776	5.78	650	0.25	4764	1.86	12 424	4.86	13 659	5.34	713	0.28	50 004	19.55
2015	3164	1.21	16 862	6.43	666	0.25	5582	2.13	16 263	6.21	15 814	6.03	794	0.30	59 145	22.57
2016	3365	1.25	19 120	7.12	684	0.25	7208	2.68	18 195	6.77	15 290	5.69	827	0.31	64 689	24.08
2017	3666	1.33	21 807	7.92	686	0.25	9554	3.47	21 301	7.74	15 706	5.71	839	0.30	73 559	26.72
2018	4196	1.49	21 374	7.58	671	0.24	10 492	3.72	20 527	7.28	14 692	5.21	875	0.31	72 827	25.83
2019	3390	1.17	22 960	7.95	629	0.22	11 910	4.13	24 935	8.64	15 720	5.44	890	0.31	80 434	27.86
2020	3723	1.26	28 706	9.71	657	0.22	13 280	4.49	26 002	8.80	15 461	5.23	1289	0.44	89 118	30.15
2021	4347	1.44	40 577	13.43	1022	0.34	19 141	6.33	34 193	11.31	17 643	5.84	1751	0.58	118 674	39.27
2022	4136	1.34	45 163	14.63	992	0.32	23 316	7.55	36 240	11.74	17 471	5.66	2099	0.68	129 417	41.92

Source: Ismaila et al (2023) Based on government payroll data for various years and supplemented with data from the MoH recruitment portal)

Note: blanks are missing data. They do not represent zeros.

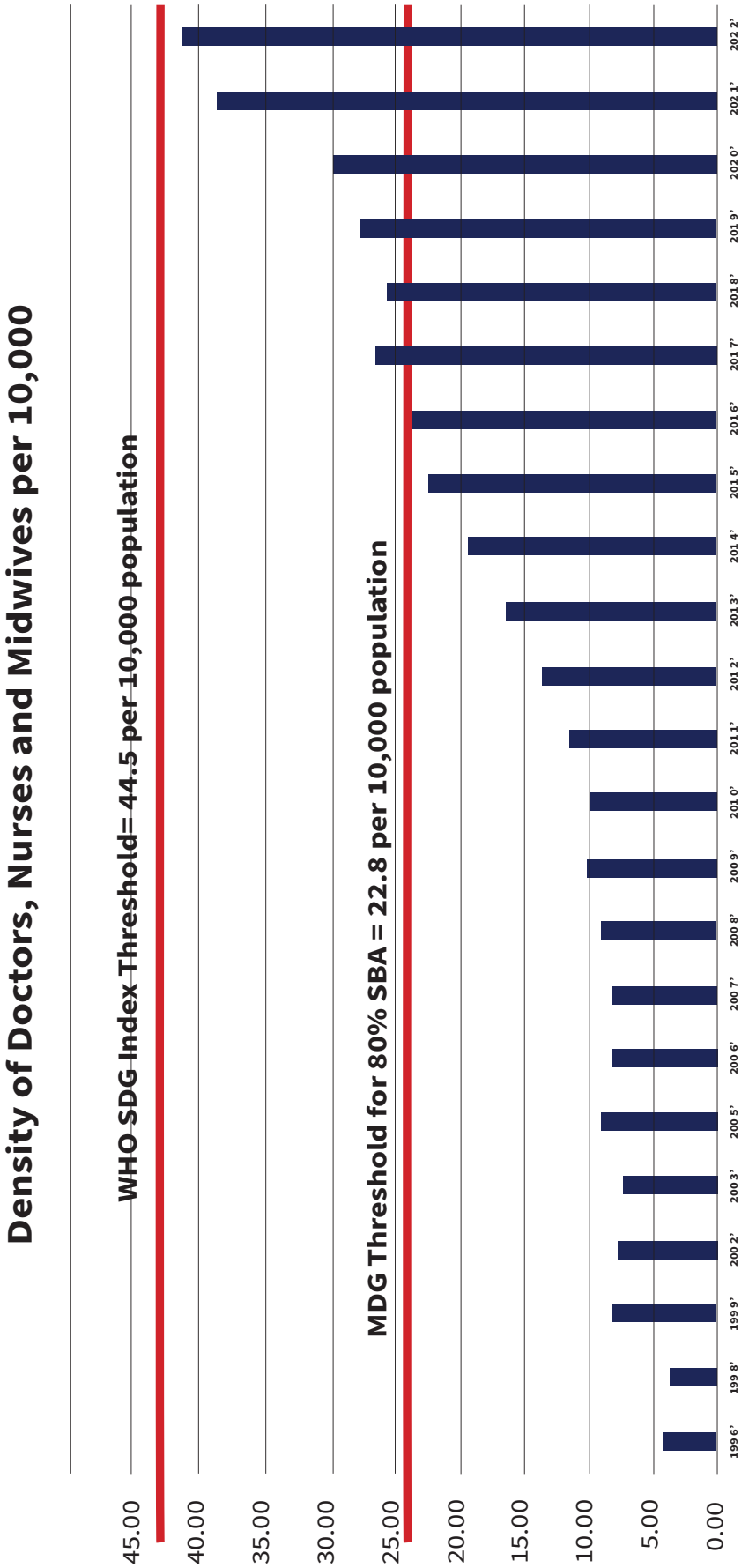


Figure 24: Trends of HWF Density in the Public Sector, 1996 - 2022

(Source: Ismaila et al (2023).)

4.4 CHARACTERISTICS OF THE CURRENT STOCK OF THE HEALTH WORKFORCE

4.4.1 Age and gender distribution of health workers

About 76.5% of the health workforce is female and the remaining 24.5% is male.

On a broader scale, the average age of male health care professionals across key occupational groups – doctors, nurses, pharmacists, and allied health staff –was approximately 40 years. This suggests a workforce with a considerable amount of experience. Conversely, the average age for their female counterparts is around 35 years, indicating a relatively younger but still experienced talent pool. These age averages are foundational data points that may inform human resource policies, career development programmes, and succession planning in the health care sector in Ghana.

Out of the overall stock of health workers in 2022, doctors were predominantly male (65.2%), especially in specialized roles, and are mostly found in the 35–44 age bracket. In the nursing field, the workforce is overwhelmingly female and predominantly young; for example, females constituted 55.6% of nursing professionals but 99% of midwifery professionals. Additionally, the majority of nursing staff fall within the 25–34-year age bracket.

This demographic concentration has several policy implications. The gender imbalance calls for targeted recruitment strategies aimed at attracting more males into the nursing profession to achieve a more balanced and diverse workforce. Furthermore, although policies and practices should be implemented that promote gender equality in medical education, there is a need to review the admission criteria, ensure fair evaluation processes, and provide support for women during their training to address these gender disparities in health specialists.

The young age profile suggests that retention strategies should focus on career development and mentorship programmes that engage these early career professionals. Additionally, as this age group is likely to be in the family forming stage, policies around work-life balance, parental leave, and childcare could be particularly effective. Therefore, comprehensive policy measures addressing these demographic specifics can contribute significantly to a more resilient and inclusive health care system in Ghana. The pharmacy sector is predominantly male, with the majority of professionals falling within the 45–54 age range. The policy implication for this phenomenon is that a conscious effort should be made to develop more professionals in this field.

In the field of allied health, gender distribution varies, with audiologists and dieticians being mostly female and biomedical engineers and emergency medical technicians primarily male; the workforce is generally younger, although biomedical engineers commonly fall within the 35–44 age range.

The observed trends in gender and age distribution across various health care occupations have significant policy implications for workforce planning and development. For roles that are heavily skewed towards one gender, like nurse specialists in mental health, targeted recruitment campaigns may be needed to achieve greater diversity. Similarly, the age distribution trends suggest the need for succession planning, particularly for roles that have an older workforce, such as anaesthesiologists and clinical oncologists. Early career support and educational incentives could be beneficial for youth dominated fields like physician assistants and occupational therapists to ensure the long-term stability and effectiveness of health care delivery in Ghana.

While there is gender and age imbalance across key health care roles, doctors and nurses are the most age-diverse. The pharmacist sector is ageing, potentially necessitating succession planning. Allied health staff are generally younger, signalling a future shift in health care provision.

This consolidated analysis could be instrumental in human resources and health policy at MoH in Ghana. It highlights the need for tailored recruitment and retention strategies, education planning, and policy initiatives to build a balanced and resilient health care workforce.

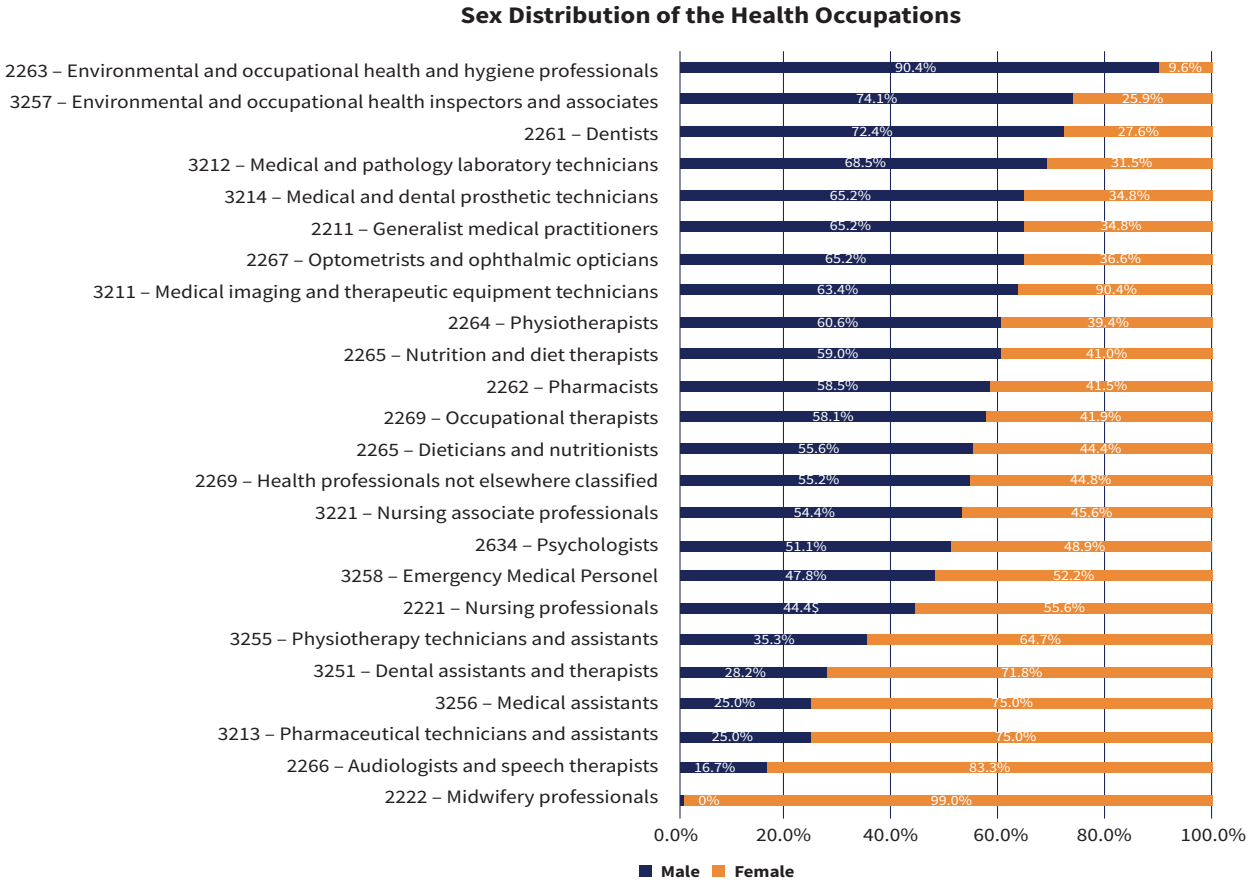


Fig. 25: Sex distribution of health workers by broad occupation

Source: Ghana HLMA data,2022

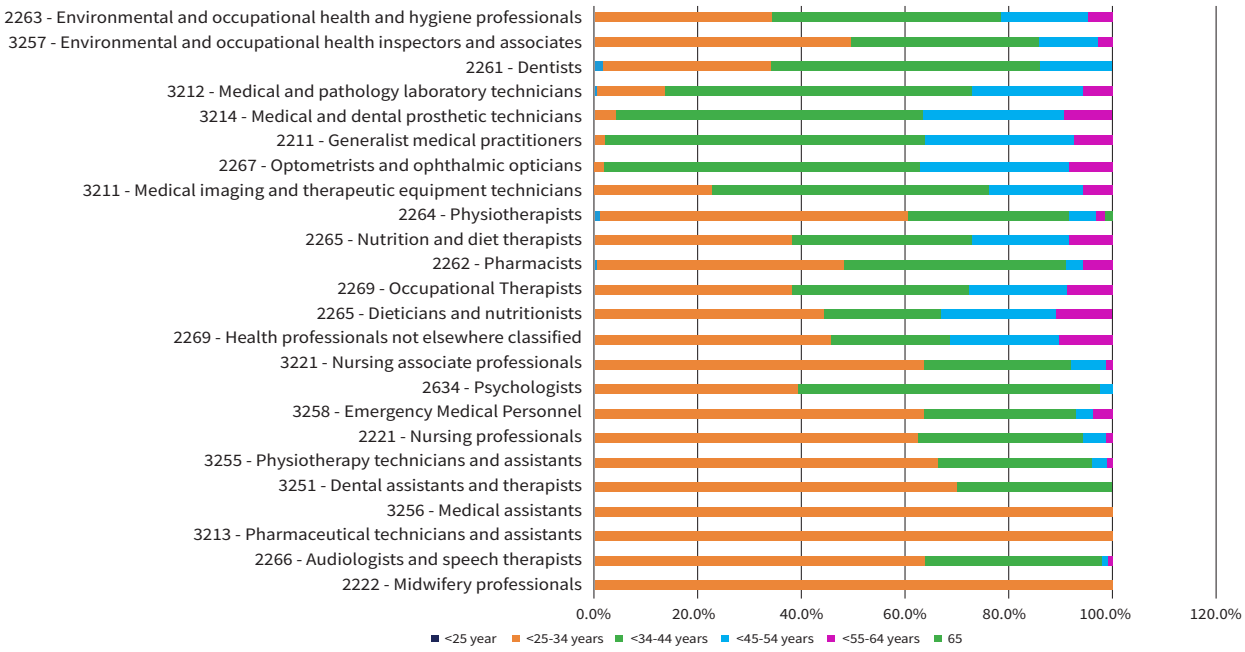


Fig. 26: Age distribution of health workers by broad occupation

Source: Ghana HLMA data,2022

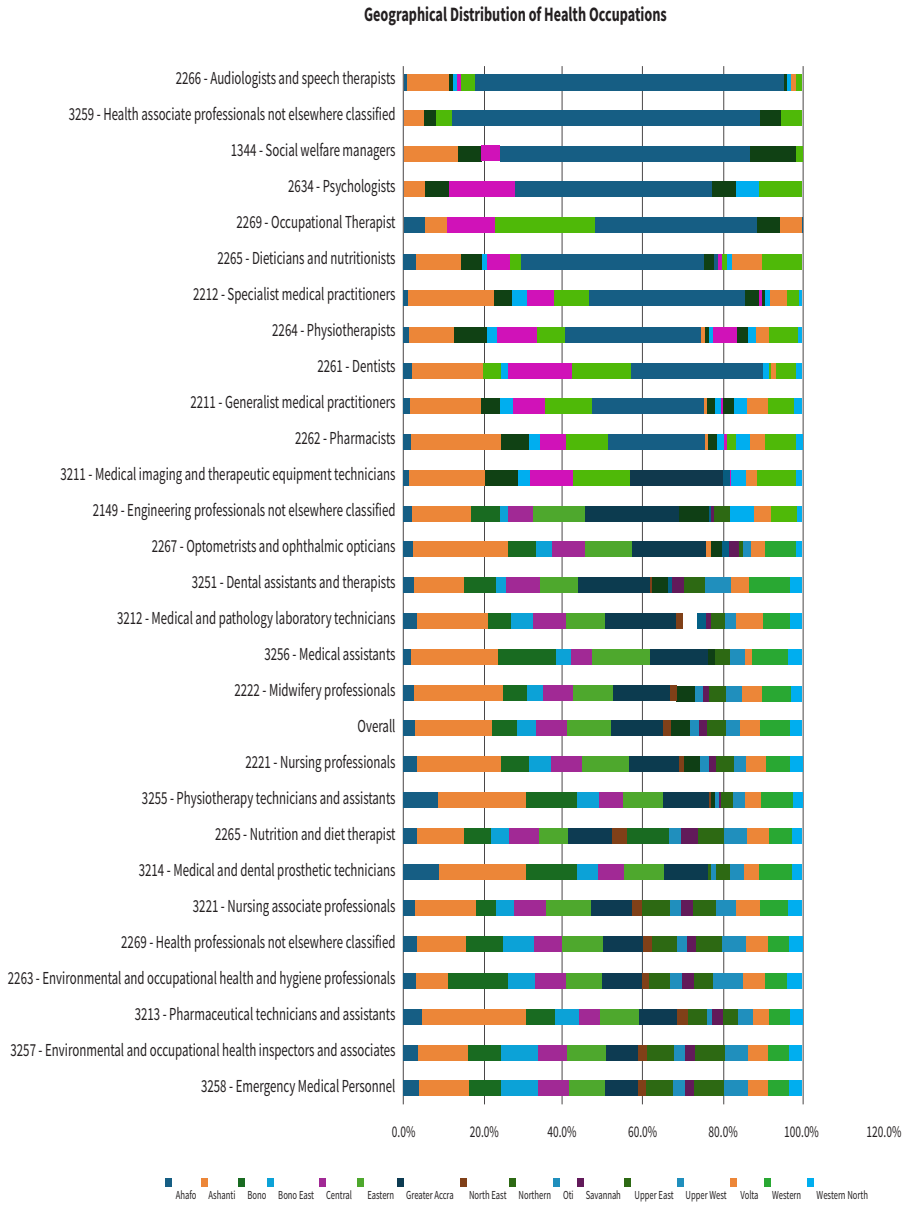
4.4.2 Geographic distribution of health workers: equity implications

The data on health care professionals in Ghana provides valuable insights into regional distribution and occupational categories. The Greater Accra and Ashanti regions with approximately 32% of the total population (GSS, 2023) dominate in almost all areas, accounting for around 67% of all doctors and 67% of all pharmacists. Similarly, these two regions make up about 51% of the nursing category when focusing on registered general nurses. In specialized roles like clinical psychologists and medical officers, Greater Accra has the highest concentration in the country.

In contrast, the Ashanti region is particularly strong in nursing roles, boasting 14 983 registered general nurses and 5476 community health nurses. The Bono and Bono East regions maintain a balanced distribution without particularly high numbers in specialized roles. The northern regions, including North East, Northern, Savannah, Upper East, and Upper West,generally show lower figures, but have a significant contribution in roles like community health nurse and enrolled nurse. The Eastern and Western regions have moderate numbers, but excel in nursing roles.

From a percentage perspective, the community health nurse and registered general nurse roles are widely distributed, forming a considerable part of health care personnel in all regions. Over 60% of specialized roles like medical specialists are concentrated in Greater Accra and Ashanti. In less populous categories, even a single individual can make a big difference percentage-wise. For instance, medical physicists are found primarily in Greater Accra (16) and Ashanti (13).

Overall, the data indicates the need for a more balanced allocation of specialized health care roles across different regions. This could involve initiatives aimed at encouraging health care professionals to practice in underserved areas.



Source: Survey data,2022

Fig. 27: Geographical distribution of health workers by broad occupation

4.5 HEALTH WORKER ATTRITION AND OUTMIGRATION

Estimates from the main service delivery agencies suggest that overall attrition of health workers was about 3%. In 2023 for example, about 962 health workers retired from the public sector, representing a retirement rate of 0.52% (from a total workforce of 184 766 as of December 2023). Health worker attrition is made up of involuntary and voluntary exits.

Involuntary exists include death, retirement, and disability, while voluntary exits encompasses migration and career change.

An operational report from the largest agency of MoH, the Ghana Health Service, shows a 2.7-fold increase in overall attrition between 2021 and 2023. In particular, vacation of post (the number of staff vacating their jobs without notice or approval) increased by 473% from

284 in 2021 to 1343 in 2023. Within the same period, resignations increased by 300% from 79 to 242.

Leave without pay – a temporary absence employees take from work with the employer's consent – also increased by 335% from 426 in 2021 to 1429 in 2023. The foregoing suggests an alarming increase in permanent and temporary absence of health workers, reinforcing the view that the outmigration of health workers is on the rise.

Before the COVID-19 pandemic, the overall attrition rate was 3.6%, but there are emerging concerns that the outmigration of health workers is driving a phenomenal increase in voluntary attrition. For example, the number of nurses seeking verification of good standing to migrate increased from 2678 in 2020 to 6208 in 2022, representing a roughly 232% increase in two years. In the half year between June and July 2023, at least 5077 nurses sought verification to migrate. Most of them sought migration to the United Kingdom (UK), the USA, Ireland and Canada. Fig. 59 provides details on the migration of nurses to other countries.

Data from the Ghana registered nurses and midwives association suggests that at least 3000 professional nurses and midwives emigrated in the first quarter of 2022. The UK Nursing Council data corroborates this, showing a 1328% increase in the number of Ghanaian nurses registered in the UK between 2019 and 2022. Also in 2022, 746 Ghanaian nurses took the US NCLEX examination and 58% qualified and potentially migrated. Although there is a time lag between the time of leaving employment in the public sector and when the name is actually removed from statistical records, a comparison of the government payroll shows a reduction of approximately 1200 health workers between December 2022 and June 2023 despite additional recruitments that might have been made during that time. The outmigration of doctors might not be as massive as that of nurses, it is also thought to be accelerating.

Although the education pipeline is producing more health workers in aggregate than those migrating, concerns are emerging as those leaving are more experienced and/or specialized. Moreover, it will take longer and a higher cost to replace them. Given the high rate of health worker unemployment and tighter fiscal space, exploring opportunities for Ghana to reap the dividend of the international health worker mobility rate has become important.

4.6 INCOME AND INCOME RELATIVITIES

4.6.1 Current level of income of health workers

The analysis revealed a very wide pay relativity: the highest earning health workers earn five times more than the lowest paid health worker. The least paid health workers include community health nurses and enrolled nurses who earn about US$ 2358 annually while the top medical specialists earn about US$ 13 220 per annum. Some of the least earners (such as enrolled nurses) earn about 29% of the level of income of a typical medical doctor. Also, medical specialists earn about 62% more than generalist doctors.

Relative to the country's economic output, the average health worker earns about three times the GDP per capita. This however ranges from one for community health nurses and enrolled nurses to almost six for medical specialists. Put in the international context, the average is four times the GDP for doctors, three times the GDP for nurses and two times the GDP for other health workers (Lauer, 2018). This suggests that the country is striving in earnest to retain its health workforce, particularly medical specialists, who earn significantly more, compared to the country's GDP per capita.

Also, the wage differentials within the health workforce indicate varying levels of attractiveness for the different health worker categories. The higher earnings potential for medical specialists (nearly six times the GDP per capita), should result in the profession being more attractive. However, the country may face more difficulty attracting individuals to the community health nurse and enrolled nurse categories, whose earnings are closer to the GDP per capita.

Table 18: Income levels and relativities

Occupation	Estimated income per worker (US$)- current official income	Health sector internal income relativity (medical officer as reference)	Wage index (income as multiple of GDP per capita)
Community health nurse	2357.91	0.29	1.00
Enrolled nurse	2357.91	0.29	1.00
Emergency medical technician	2357.91	0.29	1.00
Hospital equipment technologist	3427.60	0.42	1.46
Technical officer (X-ray)	3427.60	0.42	1.46
Dental prosthetic technologist	3427.60	0.42	1.46
Dental surgery technician	3427.60	0.42	1.46
Health promotion officer	3427.60	0.42	1.46
Prosthetics and orthotics technician	3427.60	0.42	1.46
Physiotherapy technician	3427.60	0.42	1.46
Optometrist and optician	3427.60	0.42	1.46
Physician	3427.60	0.42	1.46
Pharmacy technician	3427.60	0.42	1.46
Occupational therapist	4720.31	0.58	2.01
Medical social worker	5365.13	0.66	2.29
Medical laboratory technician	5395.29	0.66	2.30
Environmental health officer	5395.29	0.66	2.30
Medical laboratory scientist specialist	5395.29	0.66	2.30
Speech and language therapist	5395.29	0.66	2.30
Environmental health technician	5395.29	0.66	2.30
Biomedical engineer	5395.29	0.66	2.30
Clinical psychologist	5395.29	0.66	2.30
Traditional medicine practitioner	5395.29	0.66	2.30
Respiratory therapist	5395.29	0.66	2.30
Physician assistant (COHO)	5395.29	0.66	2.30
Certified registered anaesthesiologist	5395.29	0.66	2.30
Physiotherapist	5395.29	0.66	2.30
Disease control	5395.29	0.66	2.30
Hospital equipment technician	5395.29	0.66	2.30
Nutrition officer	5395.29	0.66	2.30
Dietitian	5395.29	0.66	2.30

Occupation	Estimated income per worker (US$)- current official income	Health sector internal income relativity (medical officer as reference)	Wage index (income as multiple of GDP per capita)
Audiologist	5395.29	0.66	2.30
Radiographer therapy/diagnostics	5395.29	0.66	2.30
Medical laboratory scientist	5395.29	0.66	2.30
Registered general nurse / State registered nurse	5395.29	0.66	2.30
Midwife	5433.61	0.66	2.32
Pharmacist	6773.01	0.83	2.89
Medical physicist	6857.31	0.84	2.92
Midwife specialist	6858.23	0.84	2.92
Nurse specialist - perioperative	6858.23	0.84	2.92
Public health nurse	6858.23	0.84	2.92
Nurse specialist - mental health	6858.23	0.84	2.92
Nurse specialist – neonatology	6858.23	0.84	2.92
Nurse specialist – paediatric	6858.23	0.84	2.92
Nurse specialist - critical care/emergency	6858.23	0.84	2.92
Nurse specialist – ophthalmic	6858.23	0.84	2.92
Nurse Specialist – ENT	6858.23	0.84	2.92
Nurse specialist	6858.23	0.84	2.92
Pharmacist specialist	7023.27	0.86	2.99
Medical officer	8182.65	1.00	3.49
Dental surgeon	8182.65	1.00	3.49
Medical specialist - pathologist	13 220.28	1.62	5.63
Medical specialist - obstetrician & gynaecologist	13 220.28	1.62	5.63
Medical specialist - public health	13 220.28	1.62	5.63
Medical specialist - ophthalmologist	13 220.28	1.62	5.63
Medical specialist - clinical oncologist	13 220.28	1.62	5.63
Medical specialist - orthopaedic surgeon	13 220.28	1.62	5.63
Medical specialist - ENT surgeon	13 220.28	1.62	5.63
Medical specialist - paediatrician	13 220.28	1.62	5.63
Medical specialist - general surgeon	13 220.28	1.62	5.63
Medical specialist - anaesthesiologist	13 220.28	1.62	5.63
Medical specialist - emergency medicine	13 220.28	1.62	5.63
Medical specialist – physician	13 220.28	1.62	5.63
Medical specialist - radiologist	13 220.28	1.62	5.63
Medical specialist - plastic surgeon	13 220.28	1.62	5.63

Occupation	Estimated income per worker (US$)- current official income	Health sector internal income relativity (medical officer as reference)	Wage index (income as multiple of GDP per capita)
Medical specialist - family medicine	13 220.28	1.62	5.63
Medical specialist - psychiatrist	13 220.28	1.62	5.63
Grand total	7192.54	0.88	3.06

4.6.2 Income comparison with other countries

In comparing health care salaries across Ghana, the UK, North America, and South Africa, significant differences are evident as generalist medical practitioners in North America earn approximately 25 times more than their Ghanaian counterparts. The UK follows with generalist medical practitioners earning about 17 times more than those in Ghana. Nurses in North America also earn notably higher salaries, approximately 14 times more than those in Ghana, while UK nurses earn roughly six and a half times more. Pharmacists and radiographers exhibit similar trends, with those in North America consistently earning the most, around 21 times more for pharmacists and 14 times more for radiographers than in Ghana. South Africa salaries are generally closer to those in Ghana but still higher.

(Sources: Ministry of finance

Table 19: Income relativities for Ghana, UK, North America and South Africa

Selected health professionals	Ghana (US$)	UK (US$)	North America (US$)	South Africa (US$)
Medical officer	8182.65	139 700	208 100	116 808
Nurse	5395.29	35 000	75 000	10 680
Pharmacist	6773.01	47 500	145 000	37 800
Radiographer	5395.29	41 500	76 000	24 000

4.6.3 Comparison of private and public sector health worker wages

Generally, the public sector offers more attractive remuneration to health workers than the private sector. For example, a medical officer in the public sector earns an annual income of 121 621 Ghana cedis, which is 47% higher than their private sector counterparts who earn about 64 125 Ghana cedis annually. Also, medical specialists have significantly higher earnings in the public sector, with an annual income of around 151 491.10 Ghana cedis, as compared to 100 347 cedis in the private sector. This is roughly 51% higher for the public sector worker. For dental surgeons and medical physicists, they earn about 32.6% more in the public sector than in the private sector.

(Sources: World Bank (2022); Ministry of Health (2022))

Community health nurses and enrolled nurses earn approximately 10% more in the private sector than in the public sector, but registered general nurses and midwives earn almost double in the public sector compared to the private sector (73 507 cedis versus 48 966), but nurse specialists in critical care and mental health earn about 10% more in the private sector than in the public sector.

BOX 9: INCOME COMPARISON: PUBLIC VERSUS PRIVATE SECTORS

- Highly specialized medical professionals like medical specialists and pharmacists tend to have a significant income advantage in the public sector, often 50% more than their private sector counterparts.
- Nurses, particularly specialized nurses, and allied health staff generally earn around 10% more in the private sector.

Limitation: The non-existence of a standardized salary structure in the private sector may have significantly affected the average incomes obtained from the survey.

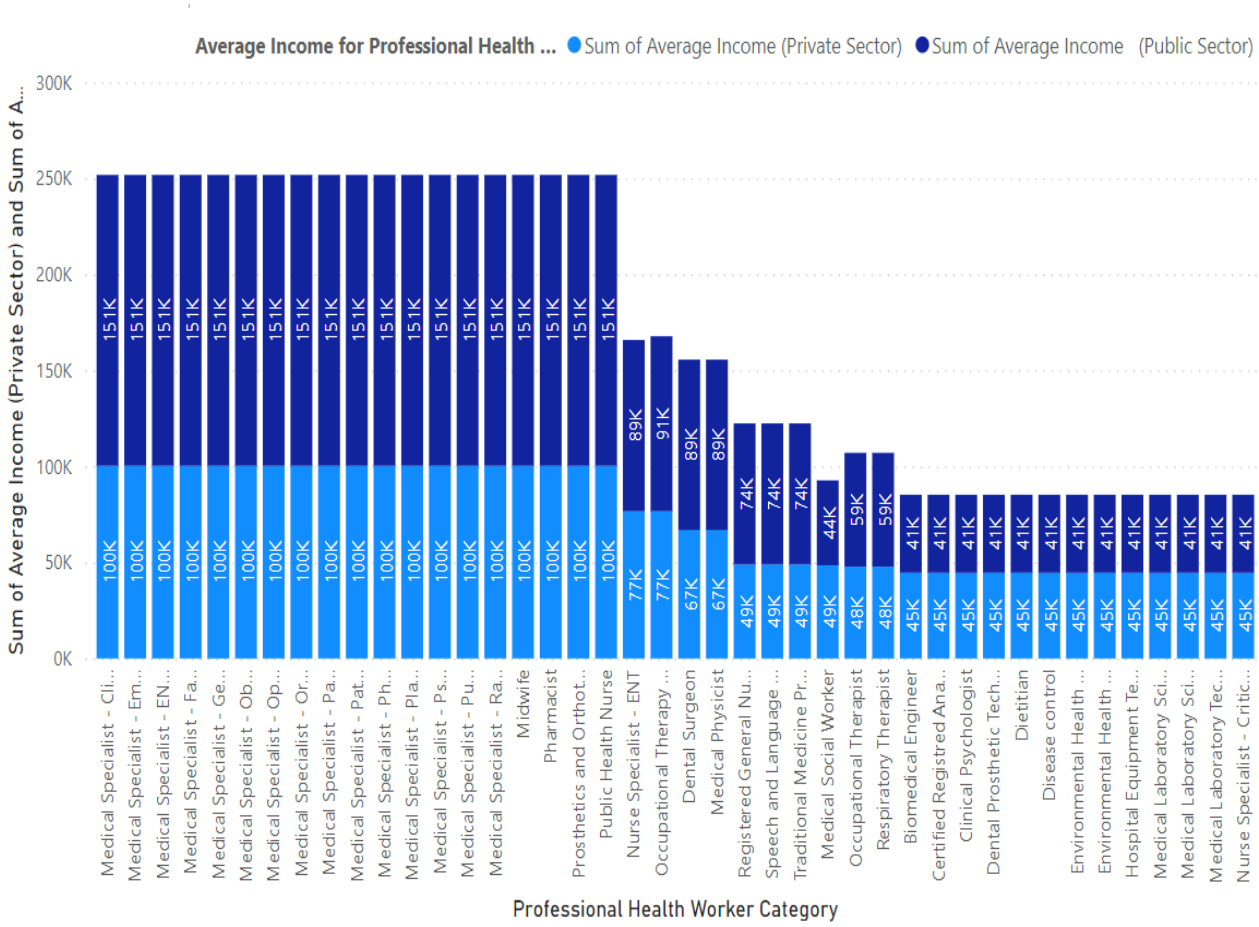


Fig. 28: Income comparison: public versus private sectors

4.7 DESCRIPTIVE ANALYSIS OF THE LEVEL OF DEMAND FOR HEALTH WORKERS

1.8.1 Health workforce establishment and vacancy analysis

The demand for health workforce in Ghana was determined using data from MoH, Ghana Health Service, teaching hospitals, the Christian Health Association of Ghana, quasi-governmental health care facilities, the Ahmadiyya Muslim Health Services and the private sector.

The Ghana health sector staffing norms served as the "policy intent" or indicative demand for health workforce employment. The Ministry of Finance medium-term budget policy (2022) documents provided a reference point for the health workforce allocation to determine funded positions while the government payroll was the source of currently filled positions.

The health sector staffing norm is based on the WISN study results and categorized into the following levels of health care in Ghana: health centres, clinics, polyclinics, primary hospitals, regional/secondary hospitals, and teaching/tertiary hospitals.

This was analysed based on the number of facilities per service level in Ghana as of 2022 to provide for the sector demand data for both public and private facilities.

A four-year survey (2019–2023) was conducted to establish annual average recruitment percentages for the various prioritized cadres working in MoH, quasi-governmental, and private health facilities.

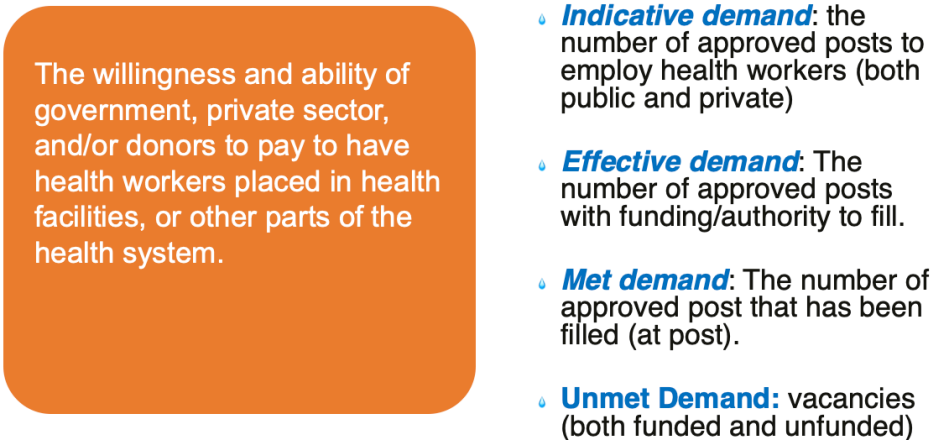


Fig. 29: Defining demand for health workers

Source: WHO 2021 (HLMA Guidebook) and Asamani et al 2022

The health sector (MoH, quasi-governmental and private) had a total of 468 236 established posts (indicative demand) out of which 226 667 (48.41%) had budgetary provisions in 2022 to be filled (the effective demand). Of the funded posts or effective demand, the met demand was 224 059 (98.87%) and the unmet demand was 2546 (1.13%).

The unmet demand was a result of the high vacancy rates in the medical and surgical specialist categories especially obstetrics and gynaecology (90.5%), plastic surgeon (94.1%), emergency medicine (88.1%), general surgeon (83.2%), ophthalmologist (93%), physician specialist (87.1%), audiologists (91.9%), dental prosthetic technologist (98.2%), and oncologist (84.5%). Other areas with high vacancy rates include occupational therapy assistants (99.2%), physician assistants (99.4%), physician assistant COHO (97.8%), nurse specialists, medical laboratory scientists (90.3), medical doctors, pharmacist specialists (81.5%), and pharmacists (73.3%). Cadres with relatively low vacancy rates include disease control (1.9%) and enrolled nurses (28.4%). See Table 20 for details.

Table 20: Public sector demand and vacancy analysis, 2022

SNo.	Occupation title used in the country	Total established post (indicative demand) (b)	Total funded post (effective demand) (c)	Number of funded posts filled (d)	Number of funded posts vacant (e)	Staff availability ratio (SAR) (d/b)	Vacancy rate (%)	Unemployment rate
HW1	Audiologist	198	18	16	2	8.1%	91.9%	70.5%
HW2	Biomedical engineer	846	610	242	368	28.6%	71.4%	0.0%
HW3	Certified registered Anaesthesiologist	3742	906	834	72	22.3%	77.7%	0.0%
HW4	Clinical psychologist	924	61	56	5	6.1%	93.9%	77.0%
HW5	Community health nurse	35 106	20 818	18 628	2190	53.1%	46.9%	53.3%
HW6	Dental prosthetic technologist	7298	138	134	4	1.8%	98.2%	84.3%
HW7	Dental surgeon	183	183	183	-	100.0%	0.0%	0.0%
HW8	Dental surgery technician	692	536	459	77	66.3%	33.7%	25.4%
HW9	Dietitian	1424	220	191	29	13.4%	86.6%	58.4%
HW10	Disease control	3993	5152	3916	1236	98.1%	1.9%	0.0%
HW11	Emergency medical technician	13 628	3720	3486	234	25.6%	74.4%	0.0%
HW12	Enrolled nurse	52 054	40 524	37 278	3246	71.6%	28.4%	32.1%
HW13	Environmental health officer	1554	375	377	(2)	24.3%	75.7%	0.0%
HW14	Environmental health technician	-	1374	1374	-			0.0%
HW15	Health promotion officer	-	3509	3357	152			17.3%
HW16	Hospital equipment technician	4743	1302	1275	27	26.9%	73.1%	0.0%

SNo.	Occupation title used in the country	Total established post (indicative demand) (b)	Total funded post (effective demand) (c)	Number of funded posts filled (d)	Number of funded posts vacant (e)	Staff availability ratio (SAR) (d/b)	Vacancy rate (%)	Unemployment rate
HW17	Hospital equipment technologist	709	64	42	22	5.9%	94.1%	0.0%
HW18	Medical laboratory scientist	846	269	82	187	9.7%	90.3%	36.5%
HW19	Medical laboratory scientist specialist	5834	2530	2530	-	43.4%	56.6%	
HW20	Medical laboratory technician		-	-	-			18.8%
HW21	Medical officer	8820	2946	2643	303	30.0%	70.0%	0.0%
HW22	Medical physicist	10 341	3200	3200	-	30.9%	69.1%	22.4%
HW23	Medical social worker	132	52	52	-	39.4%	60.6%	0.0%
HW24	Medical specialist - anaesthesiologist		183	64	119			39.9%
HW25	Medical specialist - clinical oncologist	612	95	95	-	15.5%	84.5%	0.0%
HW26	Medical specialist - emergency medicine	360	43	43	-	11.9%	88.1%	0.0%
HW27	Medical specialist - ENT surgeon	144	24	24	-	16.7%	83.3%	0.0%
HW28	Medical specialist - family medicine	786	87	87	-	11.1%	88.9%	0.0%
HW29	Medical specialist - general surgeon	991	166	166	-	16.8%	83.2%	38.9%
HW30	Medical specialist - obstetrician & gynaecologist	2377	225	225	-	9.5%	90.5%	0.0%

SNo.	Occupation title used in the country	Total established post (indicative demand) (b)	Total funded post (effective demand) (c)	Number of funded posts filled (d)	Number of funded posts vacant (e)	Staff availability ratio (SAR) (d/b)	Vacancy rate (%)	Unemployment rate
HW31	Medical specialist - ophthalmologist	658	46	46	-	7.0%	93.0%	0.0%
HW32	Medical specialist - orthopaedic surgeon	161	55	55	-	34.2%	65.8%	0.0%
HW33	Medical specialist - paediatrician	311	162	162	-	52.1%	47.9%	0.0%
HW34	Medical specialist - pathologist	101	18	18	-	17.8%	82.2%	0.0%
HW35	Medical specialist - physician	1,256	162	162	-	12.9%	87.1%	0.0%
HW36	Medical specialist - plastic surgeon	370	22	22	-	5.9%	94.1%	0.0%
HW37	Medical specialist - psychiatrist	186	66	66	-	35.5%	64.5%	0.0%
HW38	Medical specialist - public health		105	105	-			0.0%
HW39	Medical specialist - radiologist	168	69	69	-	41.1%	58.9%	0.0%
HW40	Midwife	144	3575	27	3548	18.8%	81.3%	34.9%
HW41	Midwife specialist	10 072	8226	8226	-	81.7%	18.3%	
HW42	Nurse specialist	41 255	25 398	25 343	55	61.4%	38.6%	0.0%
HW43	Nurse specialist - critical care/emergency		248	248	-			73.5%
HW44	Nurse specialist - ENT		263	263	-			44.8%

SNo.	Occupation title used in the country	Total established post (indicative demand) (b)	Total funded post (effective demand) (c)	Number of funded posts filled (d)	Number of funded posts vacant (e)	Staff availability ratio (SAR) (d/b)	Vacancy rate (%)	Unemployment rate
HW45	Nurse specialist - mental health	4195	1529	1529	-	36.4%	63.6%	48.9%
HW46	Nurse specialist - neonatology	132	83	83	-	62.9%	37.1%	
HW47	Nurse specialist - ophthalmic	1668	109	109	-	6.5%	93.5%	85.7%
HW48	Nurse specialist - paediatric	2536	336	336	-	13.2%	86.8%	95.3%
HW49	Nurse specialist - perioperative	206	32	32	-	15.5%	84.5%	67.1%
HW50	Nutrition officer	5744	463	234	229	4.1%	95.9%	42.5%
HW51	Occupational therapist	5627	1341	1332	9	23.7%	76.3%	23.1%
HW52	Occupational therapy assistant	8871	69	72	(3)	0.8%	99.2%	
HW53	Optometrist and optician	9046	1649	1622	27	17.9%	82.1%	78.6%
HW54	Pharmacist	9048	2567	2416	151	26.7%	73.3%	74.0%
HW55	Pharmacist specialist	1374	268	254	14	18.5%	81.5%	6.4%
HW56	Pharmacy technician	1188	411	240	171	20.2%	79.8%	32.2%
HW57	Physician	5908	526	38	488	0.6%	99.4%	0.0%
HW58	Physician assistant (COHO)	4428		97		2.2%	97.8%	0.0%
HW59	Physiotherapist	2704	112	256	15	9.5%	90.5%	48.8%
HW60	Physiotherapy technician	95 880	236	49 703	20	51.8%	48.2%	40.3%
HW61	Prosthetics and orthotics technician	84	49 703	16	-	19.0%	81.0%	65.5%

SNo.	Occupation title used in the country	Total established post (indicative demand) (b)	Total funded post (effective demand) (c)	Number of funded posts filled (d)	Number of funded posts vacant (e)	Staff availability ratio (SAR) (d/b)	Vacancy rate (%)	Unemployment rate
HW62	Public health nurse	234	16	50	-	21.4%	78.6%	98.4%
HW63	Radiographer therapy/ diagnostics	464	64	66	14	14.2%	85.8%	61.2%
HW64	Registered general nurse / state registered nurse	95 880	39 376	49 703	9234	51.8%	48.2%	37.6%
HW67	Technical officer (X-ray)		31		31			0.0%
HW68	Traditional medicine practitioner		1		1			
	Overall	468 236	226 667	224 059	22 275	47.9%	52.1%	

Section 5:

PREDICTIVE LABOUR MARKET ANALYSIS:

5.1 PROJECTED SUPPLY OF HEALTH WORKERS

A stock and flow methodology was used to assess the current and projected supply of health workers in Ghana, also factoring in the existing education pipeline and attrition rates. The analysis indicates that Ghana's HWF production is operating at 71% of its capacity. Maintaining this average would result in a 43% increase in HWF, growing from 294 389 in 2023 to 420 590 by 2030.

In case Ghana utilizes its maximum health workforce education and training capacity, the HWF supply is projected to increase by 71%, reaching 503 379 by 2030. Furthermore, utilizing the maximum capacity alongside a 20% reduction in attrition rates and a 10% scale-up in capacity could increase the HWF supply by 81%, culminating in a workforce of 533 297 by 2030. Fig. 30 demonstrates the supply growth potential of various scenarios.

The analysis in subsequent sections of the report incorporates the conservative supply estimates using the baseline average production scenario. The cadre-by-cadre projections are detailed in Fig. 30.

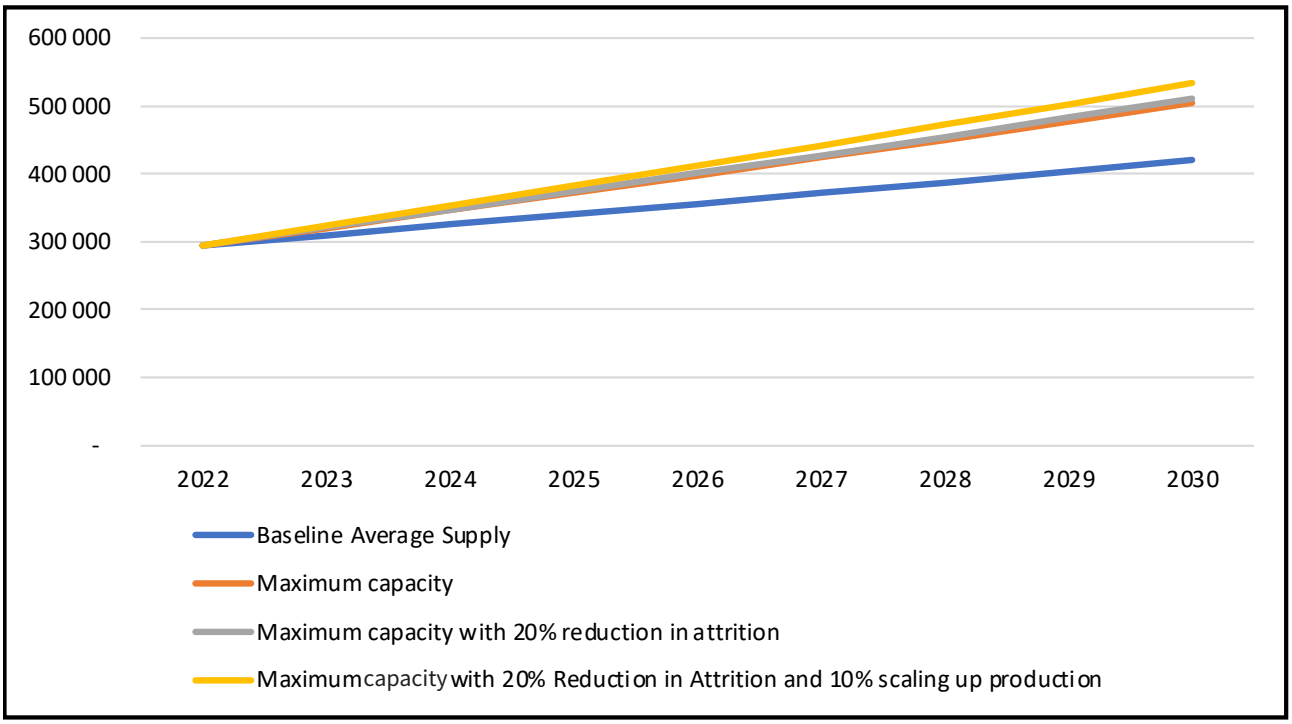


Fig. 30: Aggregate supply of health workers under various supply scenarios.

Table 21: Estimated supply of health workforce (average production scenario)

SNo.	Occupation	Equivalent ISCO classification	Year								
			2022	2023	2024	2025	2026	2027	2028	2029	2030
HW1	Audiologist	2266 - Audiologists and speech therapists	60	68	76	84	92	100	107	115	122
HW2	Biomedical engineer	2149 - Engineering professionals not elsewhere classified	244	244	244	244	244	244	244	244	244
HW3	Certified registered anaesthesiologist	2269 - Health professionals not elsewhere classified	943	1000	1057	1113	1169	1224	1279	1333	1387
HW4	Clinical psychol-ogist	2634 – Psychologists	283	289	296	302	308	314	321	327	333
HW5	Community health nurse	3221 - Nursing associate professionals	40 565	41 339	42 110	42 880	43 648	44 414	45 179	45 941	46 702
HW6	Dental prosthetic technologist	3251 - Dental assistants and therapists	873	873	873	873	873	873	873	873	873
HW7	Dental surgeon	2261 – Dentists	202	335	467	600	732	865	997	1130	1262
HW8	Dental surgery technician	3251 - Dental assistants and therapists	676	714	753	791	829	867	905	943	981
HW9	Dietitian	2265 - Dieticians and nutritionists	553	643	734	824	915	1005	1096	1186	1277
HW10	Disease control	2269 - Health professionals not elsewhere classified	3920	4012	4104	4197	4289	4381	4473	4566	4658
HW11	Emergency medical technician	3258 - Emergency Medical Personnel	3472	3472	3472	3472	3472	3472	3472	3472	3472

SNo.	Occupation	Equivalent ISCO classification	Year								
			2022	2023	2024	2025	2026	2027	2028	2029	2030
HW12	Enrolled nurse	3221 - Nursing associate professionals	55 623	57 686	59 748	61 807	63 864	65 920	67 973	70 025	72 074
HW13	Environmental health officer	2263 - Environmental and occupational health and hygiene professionals	1421	1430	1439	1448	1457	1466	1475	1484	1493
HW14	Environmental health technician	3257 - Environmental and occupational health inspectors and associates	3357	3443	3530	3616	3702	3789	3875	3961	4048
HW15	Health promotion officer	2269 - Health professionals not elsewhere classified	1541	1640	1739	1837	1936	2035	2133	2232	2330
HW16	Hospital equipment technician	2149 - Engineering professionals not elsewhere classified	42	42	42	42	42	42	42	42	42
HW17	Hospital equipment technologist	2149 - Engineering professionals not elsewhere classified	82	78	75	71	68	65	62	59	56
HW18	Medical laboratory scientist	3212 - Medical and pathology laboratory technicians	4224	4677	5129	5581	6033	6485	6936	7387	7837
HW19	Medical laboratory scientist specialist	3212 - Medical and pathology laboratory technicians									

SNo.	Occupation	Equivalent ISCO classification	Year								
			2022	2023	2024	2025	2026	2027	2028	2029	2030
HW20	Medical laboratory technician	3212 - Medical and pathology laboratory technicians	3733	4139	4544	4947	5349	5749	6147	6544	6939
HW21	Medical officer	2211 - Generalist medical practitioners	3478	4905	6557	8470	10 685	13 248	16 217	19 653	23 631
HW22	Medical physicist	3211 - Medical imaging and therapeutic equipment technicians	67	74	80	87	94	100	107	113	120
HW23	Medical social worker	1344 - Social welfare managers	116	116	116	116	116	116	116	116	116
HW24	Medical specialist - anaesthesiologist	2212 - Specialist medical practitioners	258	267	276	285	294	303	312	321	330
HW25	Medical specialist - clinical oncologist	2212 - Specialist medical practitioners	39	50	61	73	84	95	106	117	129
HW26	Medical specialist - emergency medicine	2212 - Specialist medical practitioners	73	82	92	101	111	120	129	139	148
HW27	Medical specialist - ENT surgeon	2212 - Specialist medical practitioners	27	27	27	27	27	27	27	27	27
HW28	Medical specialist - family medicine	2212 - Specialist medical practitioners	173	198	222	246	269	292	315	337	359
HW29	Medical specialist - general surgeon	2212 - Specialist medical practitioners	590	601	611	621	631	641	651	661	670

SNo.	Occupation	Equivalent ISCO classification	Year								
			2022	2023	2024	2025	2026	2027	2028	2029	2030
HW30	Medical specialist - obstetrician & gynaecologist	2212 - Specialist medical practitioners	453	507	560	613	666	718	769	820	871
HW31	Medical specialist - ophthalmologist	2212 - Specialist medical practitioners	93	96	98	101	103	106	108	110	112
HW32	Medical specialist - orthopaedic surgeon	2212 - Specialist medical practitioners	58	89	120	150	181	212	243	274	304
HW33	Medical specialist - paediatrician	2212 - Specialist medical practitioners	287	319	350	381	412	442	472	501	530
HW34	Medical specialist - pathologist	2212 - Specialist medical practitioners	28	29	30	30	31	32	33	34	34
HW35	Medical specialist – physician	2212 - Specialist medical practitioners	557	587	618	648	677	707	736	765	794
HW36	Medical specialist - plastic surgeon	2212 - Specialist medical practitioners	22	22	22	22	22	22	22	22	22
HW37	Medical specialist - psychiatrist	2212 - Specialist medical practitioners	89	97	105	112	120	127	135	142	149
HW38	Medical specialist - public health	2212 - Specialist medical practitioners	180	201	221	241	261	281	300	320	339
HW39	Medical specialist - radiologist	2212 - Specialist medical practitioners	105	114	124	133	142	151	160	169	178
HW40	Midwife	2222 - Midwifery professionals	40 249	43 412	46 540	49 633	52 692	55 718	58 709	61 668	64 593
HW41	Midwife specialist	2222 - Midwifery professionals									

SNo.	Occupation	Equivalent ISCO classification	Year								
			2022	2023	2024	2025	2026	2027	2028	2029	2030
HW42	Nurse specialist	2221 - Nursing professionals	166	219	272	324	376	427	477	527	576
HW43	Nurse specialist - critical care/ emergency	2221 - Nursing professionals	974	1020	1065	1108	1151	1192	1232	1271	1309
HW44	Nurse specialist – ENT	2221 - Nursing professionals	683	745	807	869	931	993	1055	1118	1180
HW45	Nurse specialist - mental health	2221 - Nursing professionals	16 316	16 368	16 420	16 471	16 521	16 570	16 619	16 667	16 714
HW46	Nurse specialist - neonatology	2221 - Nursing professionals									
HW47	Nurse specialist - ophthalmic	2221 - Nursing professionals	1228	1321	1414	1506	1599	1692	1785	1878	1971
HW48	Nurse specialist – paediatric	2221 - Nursing professionals	800	829	858	887	916	945	974	1003	1032
HW49	Nurse specialist - perioperative	2221 - Nursing professionals	1015	1067	1119	1170	1221	1271	1321	1371	1420
HW50	Nutrition officer	2265 - Nutrition and diet therapist	2762	2952	3142	3332	3521	3710	3898	4086	4273
HW51	Occupational therapist	2269 - Occupational therapist	108	117	126	135	144	154	163	172	181
HW52	Occupational therapy assistant	3257 - Environmental and occupational health inspectors and associates									
HW53	Optometrist and optician	2267 - Optometrists and ophthalmic opticians	1675	1730	1784	1839	1893	1948	2002	2057	2111

SNo.	Occupation	Equivalent ISCO classification	Year								
			2022	2023	2024	2025	2026	2027	2028	2029	2030
HW54	Pharmacist	2262 – Pharmacists	5653	5964	6276	6587	6897	7208	7518	7828	8137
HW55	Pharmacist specialist	2262 – Pharmacists	77	76	75	74	73	72	71	70	69
HW56	Pharmacy technician	3213 - Pharmaceutical technicians and assistants	2709	3010	3311	3610	3909	4207	4504	4800	5095
HW57	Physician	2212 - Specialist medical practitioners	2601	2632	2663	2694	2725	2757	2788	2819	2850
HW58	Physician assistant (COHO)	3256 - Medical assistants	55	730	1406	2081	2757	3432	4108	4783	5459
HW59	Physiotherapist	2264 – Physiotherapists	562	606	650	694	738	783	827	871	915
HW60	Physiotherapy technician	3255 - Physiotherapy technicians and assistants	409	490	571	651	732	813	894	974	1055
HW61	Prosthetics and orthotics technician	3214 - Medical and dental prosthetic technicians	110	125	140	156	171	186	201	217	232
HW62	Public health nurse	2221 - Nursing professionals	10 673	10 734	10 795	10 856	10 915	10 975	11 034	11 093	11 151
HW63	Radiographer therapy/ diagnostics	3211 - Medical imaging and therapeutic equipment technicians	843	909	975	1042	1108	1174	1240	1306	1373
HW64	Registered general nurse / state registered nurse	2221 - Nursing professionals	76 077	79 938	83 668	87 273	90 755	94 121	97 372	100 514	103 550

SNo.	Occupation	Equivalent ISCO classification	Year								
			2022	2023	2024	2025	2026	2027	2028	2029	2030
HW65	Respiratory therapist	3259 - Health associate professionals not elsewhere classified	21	23	26	28	31	33	36	38	40
HW66	Speech and language therapist	2266 - Audiologists and speech therapists	50	58	66	75	83	91	99	107	115
HW67	Technical officer (X-ray)	3211 - Medical imaging and therapeutic equipment technicians	66	82	98	114	130	146	162	178	194
	Overall		**294 389**	**309 665**	**324 988**	**340 397**	**355 939**	**371 665**	**387 635**	**403 917**	**420 590**

5.2 PROJECTED NEED FOR HEALTH WORKERS.

To cover at least 98% of the disease burden while targeting 80% of UHC and also considering population size, demographic changes and effective health interventions to address health needs, the number of health interventions needed by the Ghanaian population will increase from 81 230 832 in 2022 to 101 834 355 in 2030, representing a 25% increase.

In the base case scenario (best estimate), Ghana requires at least 367 118 health workers which could increase to 494 758 by 2030. This scenario considers the average disease prevalence and the average time required by health workers to deliver health interventions that address the population's health needs. Subsequent analysis and comparison with supply and demand assume this scenario.

The low-need scenario (minimum estimate) shows a requirement for about 238 875 health workers that may increase to 321 817 by 2030. This scenario considers the lower limits of disease prevalence and the minimum time required by health workers to deliver health interventions that address the population's health needs.

The high scenario (maximum estimate) reveals the need for about 560 477 health workers, increasing to 754 805 by 2030. This scenario considers the upper limits of disease prevalence and the maximum time required by health workers to deliver health interventions that address the population's health needs. Box 10 illustrates the three scenarios of need-based health workforce requirements and compares them with the average supply scenario.

BOX 10: HOW MANY HEALTH WORKERS ARE NEEDED IN GHANA?

- Considering at least 98% of the disease burden and aiming for a minimum of 80% coverage under UHC targets, factoring in population size, demographic shifts, and effective interventions for health needs, Ghana requires about 367 118 health workers, projected to increase to 494 758 by 2030.
- This however widely ranges between 238 875 and 560 477 in 2022, increasing to between 321 817 and 754 805 by 2030.
- The wide uncertainty in the estimation is underpinned by wide variations in the disease burden and vast variations in the time required by health workers to deliver health interventions. Nonetheless, these projections underscore the varying degrees of health workforce needs, reflecting the critical importance of strategic planning in health workforce development towards UHC goals.

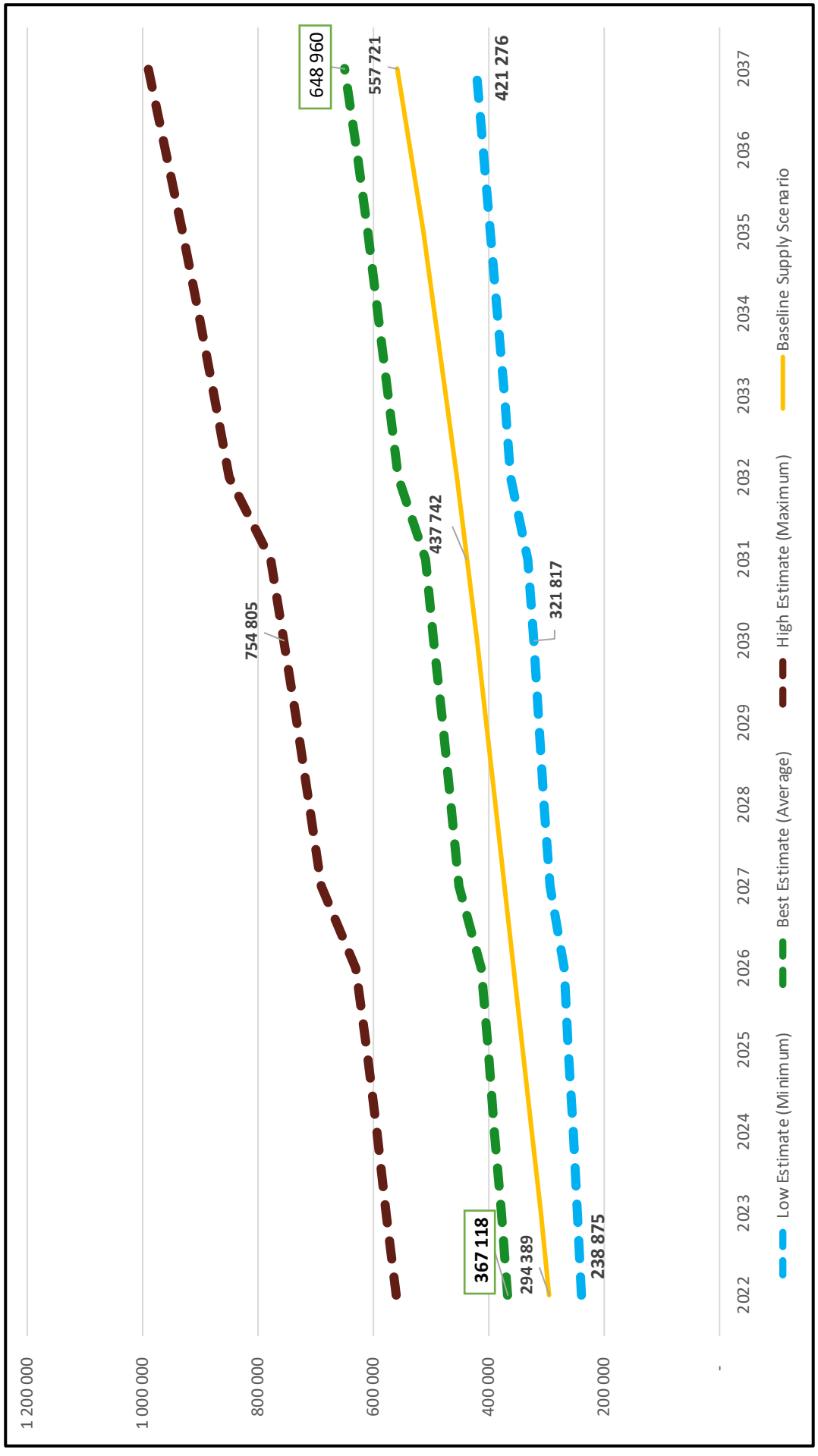


Fig. 31: Scenarios of need-based HWF requirements versus average scenario of the supply projections

Table 22 provides information on cadre-specific estimates to achieve the needed health interventions. The need for generalist medical doctors will increase by 26% in eight years from 13 332 in 2022 to 16 783 in 2030 if 98% of the disease burden is considered targeting 80% of the UHC. This translates into the need to have a generalist doctor-to-population ratio of 1:1850 or approximately five generalist doctors per 10 000 population.

For registered general nurses, the need will increase from 79 929 to 106 054 within the same period with a steady increase of 2.8% per annum and an overall increase of 32.7%. The need for midwives is anticipated to increase by 2.6% per annum from 18 032 in 2022 to 22 145 in 2030, corresponding to an overall increase of 22.8%. Thus, for every 56 women in their fertility age, there is a need for one midwife.

Similarly, the need for pharmacists is projected to increase from 6217 in 2022 to 8116 in 2030 at an annual rate of 3.4% and an overall increase of 30.5%. From 2022 to 2030, the need for medical laboratory scientists is expected to increase from 13 837 to 17 542, respectively at an annual rate of 3% and an overall increase of 26.8%.

Table 22: Projected need for health workforce, 2022 - 2030

No.	Health professionals	Year								
		2022	2023	2024	2025	2026	2027	2028	2029	2030
1	Certified registered anaesthesiologist	1031	1070	1111	1153	1197	1322	1372	1424	1478
2	Clinical psychologist	6509	6706	6908	7118	7333	8028	8268	8515	8768
3	Community health nurse	18 652	19 086	19 530	19 987	20 452	21 917	22 423	22 938	23 462
4	Dental prosthetic technologist	905	929	953	978	1003	1090	1118	1146	1174
5	Dental surgeon	1434	1469	1504	1540	1576	1712	1751	1791	1832
6	Dental surgery technician	949	972	996	1020	1044	1135	1162	1189	1216
7	Dietitian	2352	2430	2511	2595	2682	2944	3041	3141	3244
8	Disease control	4458	4543	4630	4718	4806	5200	5294	5389	5484
9	Enrolled nurse	57 237	59 138	61 115	63 179	65 315	71 821	74 260	76 786	79 405
10	Environmental health officer	2584	2634	2684	2735	2786	3015	3069	3124	3179
11	Environmental health technician	2103	2145	2186	2229	2272	2460	2506	2552	2598
12	Health promotion officer	8918	9055	9204	9364	9535	10 344	10 548	10 763	10 990
13	Medical laboratory scientist	13 837	14 119	14 414	14 726	15 051	16 370	16 745	17 135	17 542
14	Medical laboratory technician	18 657	18 979	19 319	19 680	20 058	21 740	22 177	22 634	23 110
15	Medical officer	13 332	13 602	13 883	14 176	14 478	15 724	16 066	16 419	16 783
16	Medical social worker	2380	2455	2532	2612	2696	2957	3052	3151	3253
17	Medical specialist – anaesthesiologist	1660	1734	1811	1892	1976	2193	2290	2390	2495
18	Medical specialist - clinical oncologist	333	354	376	399	424	479	508	539	571
19	Medical specialist - ENT surgeon	142	148	155	162	170	189	198	207	217
20	Medical specialist - family medicine	300	312	324	337	350	386	401	416	431
21	Medical specialist - general surgeon	889	934	982	1032	1085	1212	1274	1339	1407
22	Medical specialist - obstetrician & gynaecologist	1536	1570	1605	1641	1677	1822	1862	1903	1944
23	Medical specialist – ophthalmologist	187	194	202	210	218	240	249	259	268

No.	Health professionals	Year								
		2022	2023	2024	2025	2026	2027	2028	2029	2030
24	Medical specialist - orthopaedic surgeon	475	497	519	542	567	629	657	686	716
25	Medical specialist – paediatrician	1955	1998	2041	2086	2132	2317	2367	2419	2472
26	Medical specialist – pathologist	429	447	466	486	506	561	584	609	634
27	Medical specialist – physician	5416	5608	5808	6016	6232	6866	7111	7365	7628
28	Medical specialist - plastic surgeon	410	434	458	485	512	582	615	650	687
29	Medical specialist – psychiatrist	2895	3005	3119	3238	3360	3705	3843	3985	4131
30	Medical specialist – radiologist	742	772	804	838	873	969	1009	1052	1097
31	Midwife	18 032	18 367	18 707	19 054	19 403	21 011	21 387	21 765	22 145
32	Midwife specialist	167	174	180	187	195	215	223	232	240
33	Nurse specialist - critical care/emergency	2166	2256	2350	2449	2552	2825	2945	3069	3200
34	Nurse specialist - mental health	5769	5917	6069	6227	6388	6962	7142	7325	7513
35	Nurse specialist – neonatology	367	373	379	385	391	422	429	435	442
36	Nurse specialist – oncology	6863	7279	7720	8187	8680	9780	10 363	10 978	11 627
37	Nurse specialist – ophthalmic	117	120	122	125	128	139	142	145	148
38	Nurse specialist – paediatric	5021	5106	5193	5282	5372	5792	5890	5988	6088
39	Nurse specialist - perioperative	4521	4714	4915	5126	5346	5941	6195	6459	6734
40	Nutrition officer	3353	3434	3516	3601	3686	4008	4101	4196	4292
41	Occupational therapist	9899	10 297	10 709	11 139	11 583	12 814	13 320	13 843	14 383
42	Occupational therapy assistant	9737	10 164	10 608	11 071	11 552	12 821	13 371	13 942	14 533
43	Optometrist and optician	779	796	813	830	847	919	938	956	975
44	Pharmacist	6217	6369	6528	6695	6869	7494	7693	7901	8116
45	Pharmacist specialist	2971	3093	3220	3353	3490	3861	4018	4181	4350
46	Pharmacy technician	4763	4863	4967	5077	5191	5645	5776	5912	6054
47	Physiotherapist	8090	8431	8786	9156	9540	10 589	11 028	11 481	11 952
48	Physiotherapy technician	8638	9012	9402	9809	10 231	11 343	11 825	12 325	12 843

No.	Health professionals	Year								
		2022	2023	2024	2025	2026	2027	2028	2029	2030
49	Prosthetics and orthotics technician	1986	2065	2148	2234	2323	2566	2668	2772	2881
50	Public health nurse	5636	5837	6044	6259	6481	7129	7379	7636	7902
51	Radiographer therapy/diagnostics	2969	3091	3219	3352	3491	3870	4029	4195	4367
52	Registered general nurse / state registered nurse	79 929	82 166	84 476	86 874	89 339	97 498	100 269	103 119	106 054
53	Respiratory therapist	357	366	375	384	394	429	440	450	461
54	Speech and language therapist	5586	5851	6128	6419	6722	7478	7828	8194	8575
55	Technical officer (X-ray)	362	378	394	412	430	477	498	520	542
56	Traditional medicine practitioner	99	99	100	100	101	108	109	111	112
	Overall	**367 118**	**377 970**	**389 232**	**400 975**	**413 101**	**452 081**	**465 839**	**480 059**	**494 758**

5.3 PROJECTED ECONOMIC DEMAND FOR HEALTH WORKERS

Various studies identified economic growth measures and health spending patterns as the best predictors of the creation of health worker demand through paying for the positions in which health workers are employed. Following the 2016 Jennifer Liu et al. (2016) approach, GDP per capita, current health expenditure, out-of-pocket payments and an interaction term between GDP per capita and out-of-pocket payments were used as the main predictors of economic capacity for workforce employment. Using these parameters, the fitted model projects that in 2022, Ghana's overall economic capacity for workforce employment was 127 618, which is anticipated to increase by only 8% to 137 407 by 2025. If the economic parameters underlying the model remain fairly constant, by 2030, the estimated economic capacity would be roughly 147 763, marking a 16% increase from the baseline estimate of 2022 (Fig. 32).

When the aggregate estimates are triangulated with the WHO 2021 threshold simulated skills mix, the demand for medical doctors would likely increase from 7394 in 2022 to 8562 in 2030. Additionally, the model estimates suggest that the economic capacity to employ nurses ranges between 55 714 and 68 508. Pharmacy and pharmaceutical technicians show a high demand between 14 024 and 16 238 (Fig. 32).

Given the overall demand of between 127 618 and 147 763 while the need is at least 367 118 shows that demand is currently expanding at a slower pace than needs (Table 22). Relative to supply, the current demand corresponds to only 43.4% of the 2022 supply level which was 294 389 health workers.

In light of the foregoing, the country's demand is weaker than its supply which leads to unemployment, currently estimated at 40%. The country is therefore facing a complex phenomenon of labour market failure. On the one hand, the need-based workforce requirement is yet to be fully met, while on the other hand, the fiscal constraint has limited demand capacity, resulting paradoxically in unemployment of health workers.

These mismatches have led to considerable uncertainties regarding the prospects of healthy employment of qualified workers who have turned to the international market for employment opportunities. The negative externalities of the phenomenon, exacerbated by suboptimum working conditions, have pushed international mobility to include those who are already employed. If unaddressed, this situation could pose several risks to the health system and national security including the loss of skills, obsolescence and public protest for employment as witnessed in the 2014 era (Asamani et al., 2020).

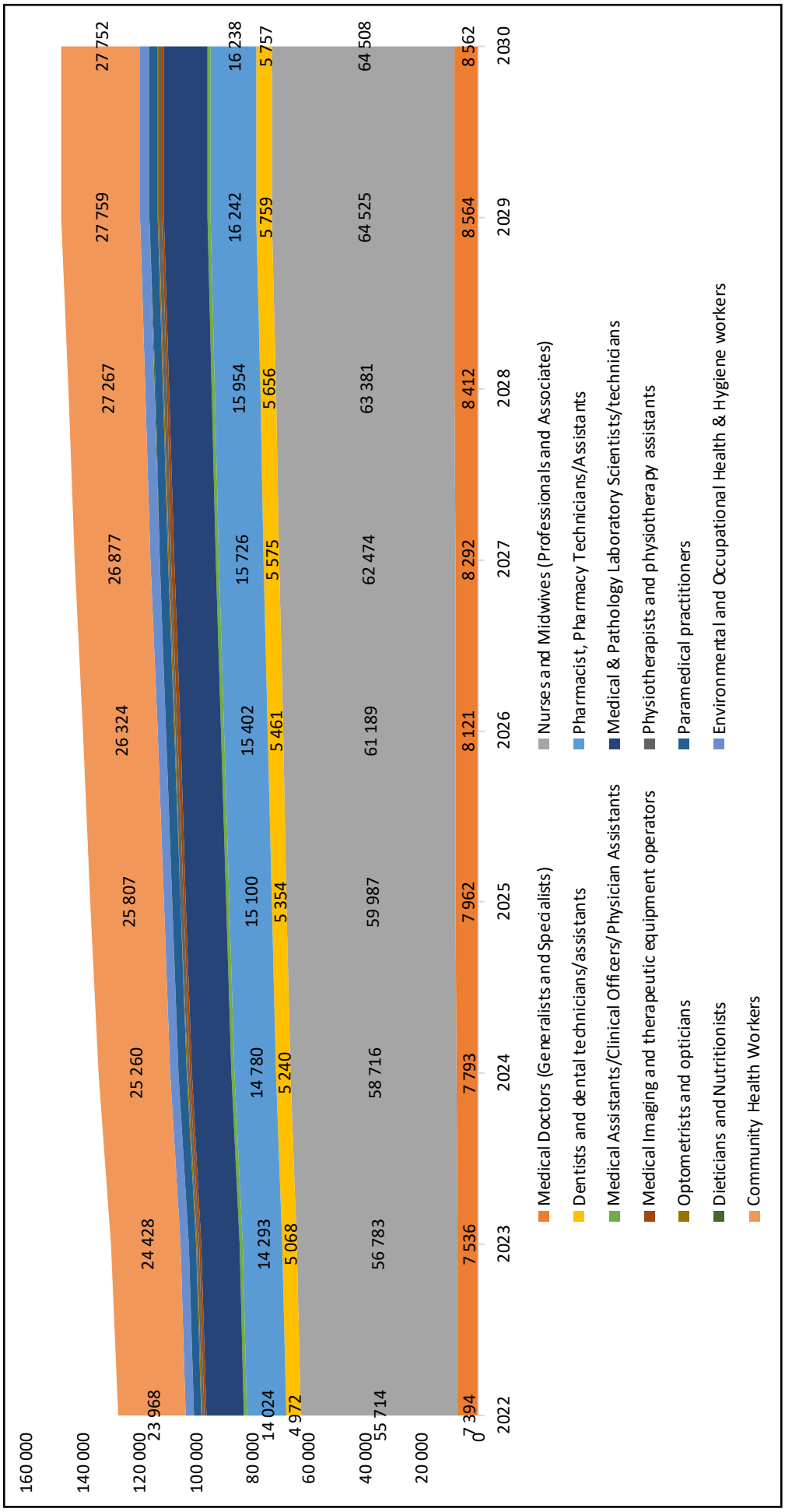


Fig. 32: Aggregate demand for health workforce based on economic parameters.

5.4 PROJECTED NEED VERSUS SUPPLY GAP ANALYSIS

Ghana has a need-based requirement of 367 118 health workers across 57 occupations compared with a supply of 294 389. Thus, Ghana has at least 80% of the workforce required to cover 98% of the disease burden if all the health workers were employed. Given an overall shortfall of 72 729, it is anticipated that if the supply pipeline remained constant, nearly 93.7% of the need would be covered by 2027 with a need-based shortage of 28 409 which would likely be addressed by 2032. Despite the overall positive outlook, there are significant variations across cadres. For example, specialist disciplines have a higher degree of shortages while generalist disciplines tend to have a smaller degree of shortages.

It is instructive to note that Ghana's effective supply of midwives – which stood at 40 249 in 2022 – was about 2.2 times the required 18 032. All things being equal, the supply of midwives is anticipated to continue to outstrip the need-based requirement. Nevertheless, the demographics of current midwives suggest a future risk of mass retirement. Therefore, the current and future midwife training policies should carefully balance the need for this training with the need for residual capacity to replenish future anticipated retirement if all the supply were employed.

Table 23: Supply versus need gap analysis – five-year intervals.

No.	Health professionals	2022				2027				2032			
		Need-based (a)	Supply (b)	Gap (b-a)	SAR (b/a)	Need-based (a)	Supply (b)	Gap (b-a)	SAR (b/a)	Need-based (a)	Supply (b)	Gap (b-a)	SAR (b/a)
1	Audiologist	12	60	48	485.7%	14	150	136	1087.8%	15	232	217	1508.8%
2	Certified registered anaesthesiologist	1031	943	(88)	91.5%	1322	1529	208	115.7%	1688	2095	407	124.1%
3	Clinical psychologist	6509	283	(6226)	4.3%	8028	327	(7702)	4.1%	9844	370	(9473)	3.8%
4	Community health nurse	18 652	40 565	21 913	217.5%	21 917	45 788	23 871	208.9%	25 671	50 949	25 279	198.5%
5	Dental prosthetic technologist	905	873	(32)	96.4%	1090	873	(217)	80.1%	1302	873	(429)	67.1%
6	Dental surgeon	1434	202	(1232)	14.1%	1712	1215	(496)	71.0%	2024	2229	205	110.1%
7	Dental surgery technician	949	676	(273)	71.3%	1135	950	(185)	83.7%	1345	1222	(123)	90.8%
8	Dietitian	2352	553	(1799)	23.5%	2944	1233	(1711)	41.9%	3664	1913	(1751)	52.2%
9	Disease control	4458	3920	(538)	87.9%	5200	4883	(318)	93.9%	6008	5845	(162)	97.3%
10	Enrolled nurse	57 237	55 623	(1614)	97.2%	71 821	73 672	1851	102.6%	90 018	91 635	1618	101.8%
11	Environmental health officer	2584	1421	(1163)	55.0%	3015	1501	(1514)	49.8%	3483	1581	(1902)	45.4%
12	Environmental health technician	2103	3357	1254	159.6%	2460	4438	1978	180.4%	2849	5518	2669	193.7%
13	Health promotion officer	8918	1541	(7377)	17.3%	10 344	2380	(7964)	23.0%	12 183	3216	(8967)	26.4%
14	Medical laboratory scientist	13 837	4224	(9613)	30.5%	16 370	7801	(8569)	47.7%	19512	11 364	(8148)	58.2%

No.	Health professionals	2022				2027				2032			
		Need-based (a)	Supply (b)	Gap (b-a)	SAR (b/a)	Need-based (a)	Supply (b)	Gap (b-a)	SAR (b/a)	Need-based (a)	Supply (b)	Gap (b-a)	SAR (b/a)
15	Medical laboratory technician	18 657	3733	(14 924)	20.0%	21 740	6143	(15 597)	28.3%	25 552	8505	(17 047)	33.3%
16	Medical officer	13 332	3478	(9854)	26.1%	15724	15 625	(99)	99.4%	18 606	40 887	22 281	219.8%
17	Medical social worker	2380	116	(2264)	4.9%	2957	116	(2841)	3.9%	3676	116	(3560)	3.2%
18	Medical specialist - anaesthesiologist	1660	258	(1402)	15.5%	2193	393	(1801)	17.9%	2877	528	(2350)	18.3%
19	Medical specialist - clinical oncologist	333	39	(294)	11.7%	479	249	(230)	52.0%	681	459	(222)	67.4%
20	Medical specialist - ENT surgeon	142	27	(115)	19.0%	189	27	(162)	14.3%	251	27	(224)	10.7%
21	Medical specialist - family medicine	300	173	(127)	57.6%	386	574	188	148.8%	492	943	451	191.8%
22	Medical specialist - general surgeon	889	590	(299)	66.4%	1212	751	(461)	62.0%	1646	900	(746)	54.7%
23	Medical specialist - obstetrician & gynaecologist	1536	453	(1083)	29.5%	1822	1411	(411)	77.4%	2150	2328	178	108.3%
24	Medical specialist - ophthalmologist	187	93	(94)	49.7%	240	136	(105)	56.5%	306	172	(133)	56.3%
25	Medical specialist - orthopaedic surgeon	475	58	(417)	12.2%	629	828	199	131.6%	825	1598	773	193.7%
26	Medical specialist - paediatrician	1955	287	(1668)	14.7%	2317	837	(1480)	36.1%	2734	1350	(1384)	49.4%
27	Medical specialist - pathologist	429	28	(401)	6.5%	561	48	(513)	8.6%	729	68	(661)	9.3%

No.	Health professionals	2022				2027				2032			
		Need-based (a)	Supply (b)	Gap (b-a)	SAR (b/a)	Need-based (a)	Supply (b)	Gap (b-a)	SAR (b/a)	Need-based (a)	Supply (b)	Gap (b-a)	SAR (b/a)
28	Medical specialist - physician	5416	557	(4859)	10.3%	6866	1163	(5703)	16.9%	8673	1749	(6924)	20.2%
29	Medical specialist - plastic surgeon	410	22	(388)	5.4%	582	22	(560)	3.8%	821	22	(799)	2.7%
30	Medical specialist - psychiatrist	2895	89	(2806)	3.1%	3705	192	(3513)	5.2%	4701	289	(4412)	6.1%
31	Medical specialist - radiologist	742	105	(637)	14.2%	969	238	(731)	24.5%	1266	364	(902)	28.7%
32	Midwife	18 032	40 249	22 217	223.2%	21 011	69 281	48 269	329.7%	24 371	96 739	72 368	396.9%
33	Midwife specialist	167				215				274			
34	Nurse specialist - critical care/emergency	2166	974	(1192)	45.0%	2825	1300	(1525)	46.0%	3681	1585	(2096)	43.1%
35	Nurse specialist - mental health	5769	16 316	10 547	282.8%	6962	17 235	10 272	247.5%	8366	18 091	9725	216.2%
36	Nurse specialist - neonatology	367				422				482			
37	Nurse specialist - ophthalmic	117	1228	1111	1049.4%	139	2131	1992	1529.2%	165	3034	2869	1839.7%
38	Nurse specialist - paediatric	5021	800	(4221)	15.9%	5792	1037	(4755)	17.9%	6652	1275	(5377)	19.2%
39	Nurse specialist - perioperative	4521	1015	(3506)	22.5%	5941	1391	(4550)	23.4%	7776	1753	(6023)	22.5%
40	Nutrition officer	3353	2762	(591)	82.4%	4008	4115	107	102.7%	4750	5454	704	114.8%
41	Occupational therapist	9899	108	(9791)	1.1%	12 814	206	(12 608)	1.6%	16 460	305	(16 155)	1.9%
42	Occupational therapy assistant	9737				12 821				16 736			

No.	Health professionals	2022				2027				2032			
		Need-based (a)	Supply (b)	Gap (b-a)	SAR (b/a)	Need-based (a)	Supply (b)	Gap (b-a)	SAR (b/a)	Need-based (a)	Supply (b)	Gap (b-a)	SAR (b/a)
43	Optometrist and optician	779	1675	896	214.9%	919	2041	1122	222.1%	1073	2406	1333	224.2%
44	Pharmacist	6217	5653	(564)	90.9%	7494	7795	301	104.0%	9083	9928	845	109.3%
45	Pharmacist special-ist	2971	77	(2894)	2.6%	3861	72	(3789)	1.9%	4986	68	(4918)	1.4%
46	Pharmacy technician	4763	2709	(2054)	56.9%	5645	4937	(707)	87.5%	6731	7133	402	106.0%
47	Physiotherapist	8090	562	(7528)	6.9%	10 589	821	(9769)	7.7%	13 744	1079	(12 665)	7.9%
48	Physiotherapy technician	8638	409	(8229)	4.7%	11 343	1385	(9958)	12.2%	14 769	2361	(12 407)	16.0%
49	Prosthetics and orthotics technician	1986	110	(1876)	5.5%	2566	269	(2297)	10.5%	3292	428	(2864)	13.0%
50	Public health nurse	5636	10 673	5037	189.4%	7129	11 294	4165	158.4%	8955	11 894	2939	132.8%
51	Radiographer therapy/diagnostics	2969	843	(2126)	28.4%	3870	1591	(2279)	41.1%	5021	2338	(2682)	46.6%
52	Registered general nurse / state registered nurse	79 929	76 077	(3852)	95.2%	97 498	107 246	9748	110.0%	118 708	133 498	14 790	112.5%
53	Respiratory therapist	357	21	(336)	5.9%	429	47	(382)	11.1%	512	74	(439)	14.4%
54	Speech and language therapist	5586	50	(5536)	0.9%	7478	160	(7318)	2.1%	9938	270	(9668)	2.7%
55	Technical officer (X-ray)	362	66	(296)	18.2%	477	283	(195)	59.3%	626	500	(126)	79.9%
56	Traditional medicine practitioner	99				108				121			

No.	Health professionals	2022				2027				2032			
		Need-based (a)	Supply (b)	Gap (b-a)	SAR (b/a)	Need-based (a)	Supply (b)	Gap (b-a)	SAR (b/a)	Need-based (a)	Supply (b)	Gap (b-a)	SAR (b/a)
57	Nurse specialist – oncology	6863				9780				13 807			
Aggregate	**Ghana**	**367 118**	**294 389**	**(72 729)**	**80.2%**	**452 081**	**423 672**	**(28 409)**	**93.7%**	**556 670**	**558 941**	**2271**	**100.4%**

5.5 FINANCIAL FEASIBILITY ANALYSIS

This section assesses the possible financial space available or required to meet the current and future need-based health workforce requirements, provided that all other things remain constant. Also, the need-based financial space required to address the future disease burden is forecasted.

The government funding (fiscal space) available for health workforce financing in 2022 was US$ 750.5 million. At current wages, salaries, and disease burden, this is expected to increase to US$ 1034 million by 2030, making an average of 1032 million between 2022 and 2030. On the other hand, the private sector financing for the health workforce in 2022 was US$ 345.9 million. It will likely increase to US$ 476.7 million by 2030, averaging 475.9 million over the period.

Given the above, at baseline (2022) wages and salaries, the cumulative available financial space for the health workforce was US$ 1096 million. This was predicted to increase to USD 1511 million by 2030, averaging US$ 1508 million over the period. It was estimated that Ghana will need an average estimated amount of US$ 9791 million to employ the projected supply between 2022 and 2030 and an estimated US$ 9958 on average to meet the population-based health workforce needs over the same period.

It is projected that the country will need an average of US$ 167 million between 2022 and 2030 to train a health workforce to meet the population's health needs. The total investment required to address the population's health needs (needs-based employment and training) is projected at US$ 9765 million by 2030.

The percentage of public health sector wage required to absorb unemployed health workers in 2022 was 30.6%. This was anticipated to increase to 568% by 2030, averaging 6292% from 2022 to 2030. The health workforce expenditure was projected to average 1.4% of GDP while the cost of supply will likely average 7.9% of GDP over the period. Similarly, the average cost of the population's health need is 7.9% of GDP over the same period.

The additional cost of need was anticipated to average 6.5% of GDP, while the additional cost of supply would likely average 6.5% of GDP. To meet the country's population health needs, it was established that Ghana required a HWF financing of US$ 59 per capita in 2022. This will likely increase to a requirement of US$ 209 per capita HWF spending by 2030, averaging about US$ 255 per capita during the period as shown on Table 24.

Table 24: Financial feasibility analysis and projections

ID	Cost implications and financial sustainability estimates	2022	2023	2024	2025	2026	2027	2028	2029	2030	Average
1	Public sector budget space for HWF (a)	750.51	771.53	804.33	838.75	874.65	912.08	951.12	991.83	1034.28	1032.53
2	Estimated private sector contribution (b)	345.90	355.59	370.70	386.57	403.12	420.37	438.36	457.12	476.69	475.88
3	Cumulative financial space (c = a + b)	1096.42	1127.12	1175.03	1225.32	1277.77	1332.45	1389.48	1448.95	1510.97	1508.41
1	Cost of employing projected supply (d)	1326.35	1676.05	2101.47	2618.15	3244.85	4004.31	4924.12	6037.87	7386.55	9791.21
3	Cost of employing to fill population health needs-based requirements (f)	1833.96	2171.18	2570.94	3045.35	3607.49	4540.95	5379.95	6374.42	7553.28	9598.49
4	Cost of training to fill population health needs-based gaps (g), US$ million	166.96	166.96	166.96	166.96	166.96	166.96	166.96	166.96	166.96	166.96
1	Overall investment required based on population health need (needs-based employment + cost of training), (f+g), US$ million	2000.92	2338.14	2737.90	3212.31	3774.45	4707.91	5546.91	6541.38	7720.24	9765.45
6	Percentage of public health sector wage required to absorb “unemployed” health workers	30.64%	71.15%	115.18%	166.06%	224.90%	292.94%	371.63%	462.67%	568.08%	692.42%
1	Current HWF expenditure as % of GDP	1.38%	1.38%	1.38%	1.38%	1.38%	1.38%	1.38%	1.38%	1.38%	1.38%
2	Cost of supply as % of GDP	1.67%	2.05%	2.47%	2.95%	3.50%	4.14%	4.89%	5.75%	6.74%	7.91%

ID	Cost implications and financial sustainability estimates	2022	2023	2024	2025	2026	2027	2028	2029	2030	Average
3	Cost of population health needs as % of GDP	2.31%	2.66%	3.02%	3.43%	3.89%	4.70%	5.34%	6.07%	6.89%	7.87%
4	Additional cost of need as % of GDP	0.93%	1.28%	1.64%	2.05%	2.51%	3.32%	3.96%	4.69%	5.51%	6.49%
5	Additional cost of supply as % of GDP	0.29%	0.67%	1.09%	1.57%	2.12%	2.76%	3.51%	4.37%	5.36%	6.53%
	Per capita HWF financing based on need	59.02	68.56	79.66	92.60	107.68	133.10	154.88	180.29	209.94	255.15

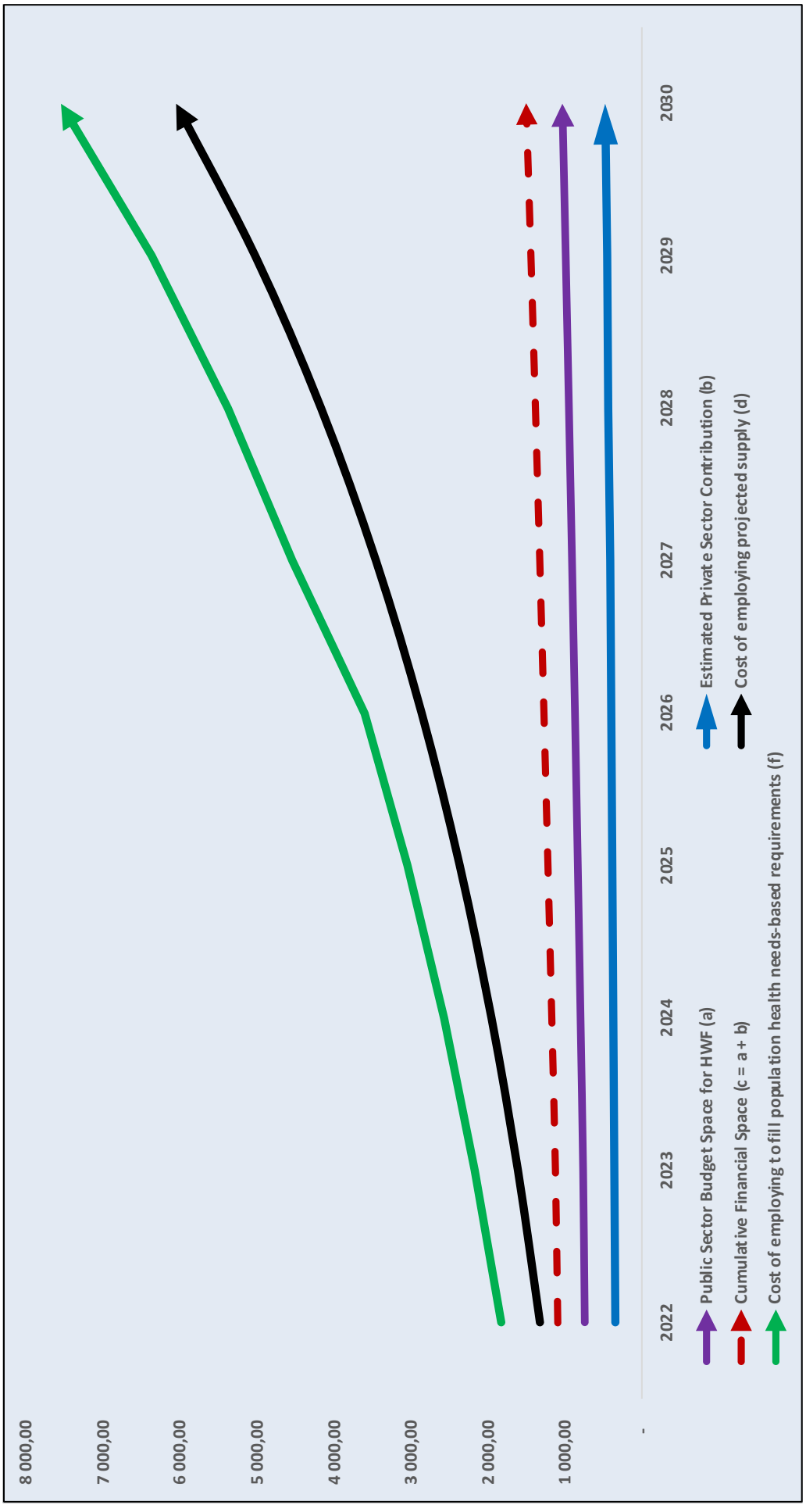


Figure 33: Financial feasibility analysis

Section 6:

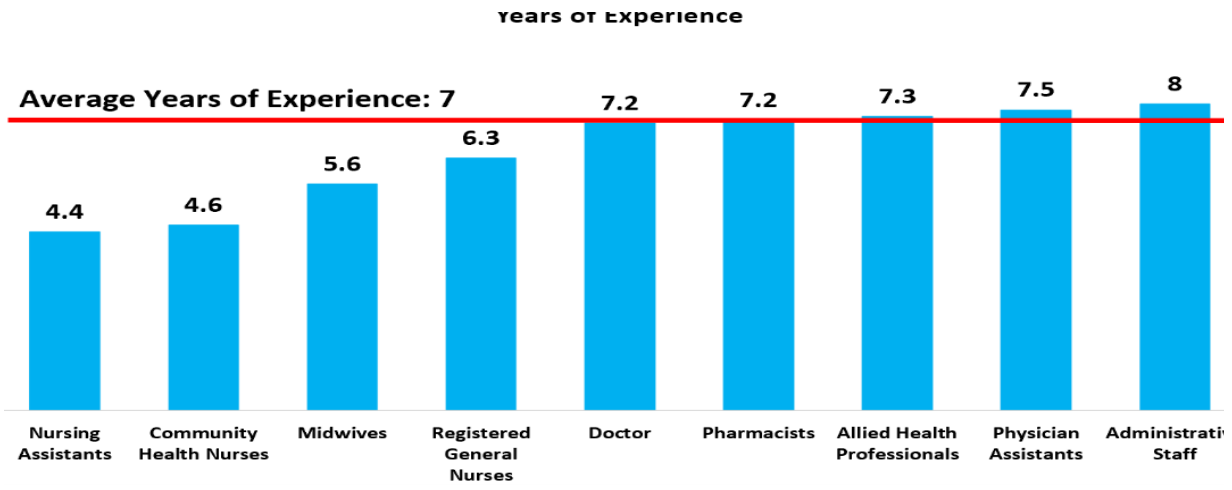
EXPLORATORY LABOUR MARKET ANALYSIS FROM A HEALTH WORKER SURVEY

6.1 CATEGORIZATION OF RESPONDENTS

6.1.1 Years of experience of a health worker

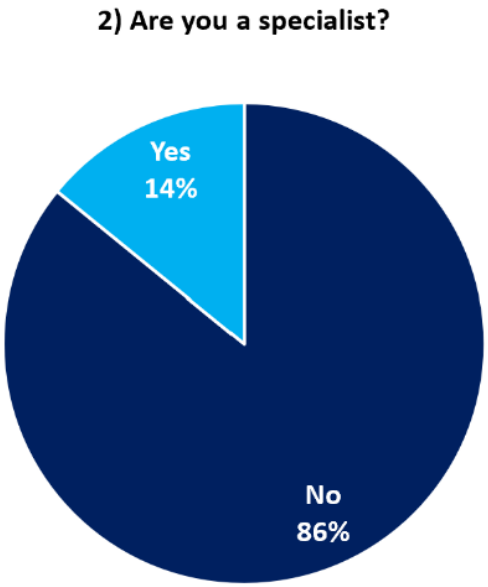
The average years of experience of interviewed health workers was seven years across all staff categories interviewed, the lowest being 4.4 years (nursing assistants) and the highest was eight years (administrative staff). When disaggregated by category, the average years of experience for doctors was seven years, while that for registered general nurses was 6.3 years. This pointed to a potential challenge in retention of experienced cadres, with more than 10 years of work experience. The available evidence implies that health professionals migrate out of the country after serving for an average of seven years.

Figure 34: Average years of experience



Level of specialization amongst health workers

The majority (86%) of respondents had not specialized in their field of work, while only 14% had specialized. This potentially means that the majority of health workers had not yet acquired the specialized in-depth skills required to manage complex and specialized medical conditions.



Sex distribution

Males constituted the majority (56.36%) of health workers, while females constituted 43.64% of the workforce. Globally, females constitute the majority of health workers. According to WHO, in 2019, approximately 70% of health workers were female. Also, nurses are predominantly females (80%) as of 2020, according to the International Council of Nurses. The highest numbers of attrition in the Ghana health sector are in the nursing fraternity, which may explain why there are more males than females in the health sector.

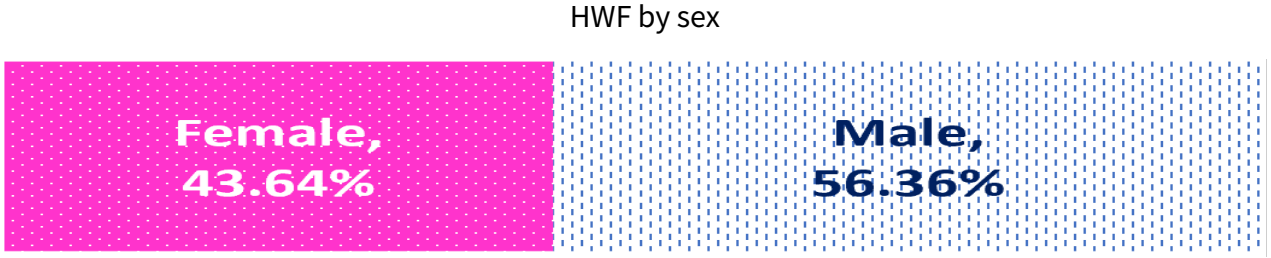


Fig. 35: Gender of HWF of the survey

Distribution of health workers by category

Allied health professionals constituted about 52.2% of respondents, followed by registered general nurses (14.3%), nursing assistants (13.75%), midwives (6.5%) and community health workers (4.36%). Doctors and pharmacy staff had the lowest representation with 1.91% and 1.2% respectively. Administrative staff constituted 3.68% of the respondents.

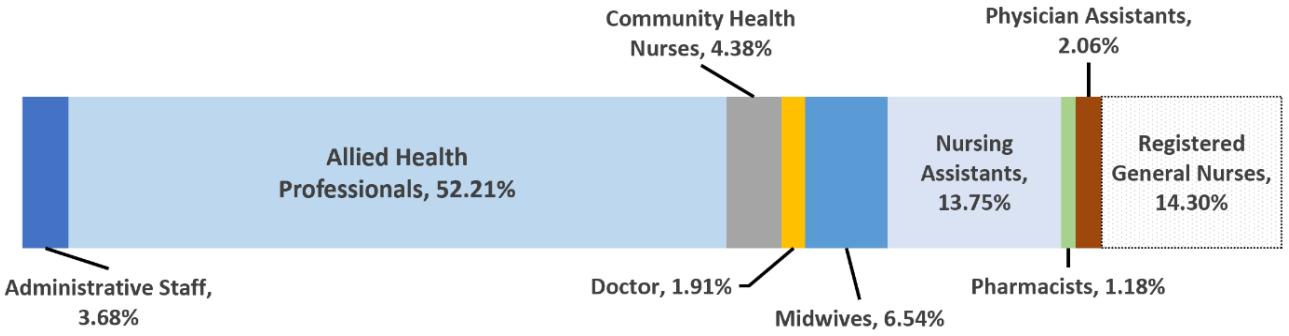


Figure 36: Distribution of cadres

6.2. DEMOGRAPHIC CHARACTERISTICS OF THE RESPONDENTS (HEALTH WORKERS)

6.2.1 Age distribution of health workers

The highest number of respondents were in the 35–39 (40.1%) age group, followed by the 30–34 age group (24.5%) and the 25–29 age group (14.5%). The 50–54 age group had 6.3% more respondents than the 45–49 age group which made up just 2.4% of respondents. When disaggregated by gender, it was established that within the 20–49-year age group, there were generally more males than females, although the gender distribution for the 35–39 age group was almost equal, with 534 females and 527 males. There were however more females than males for the 50–59 age groups, possibly pointing to more females migrating back to the country from this age group.

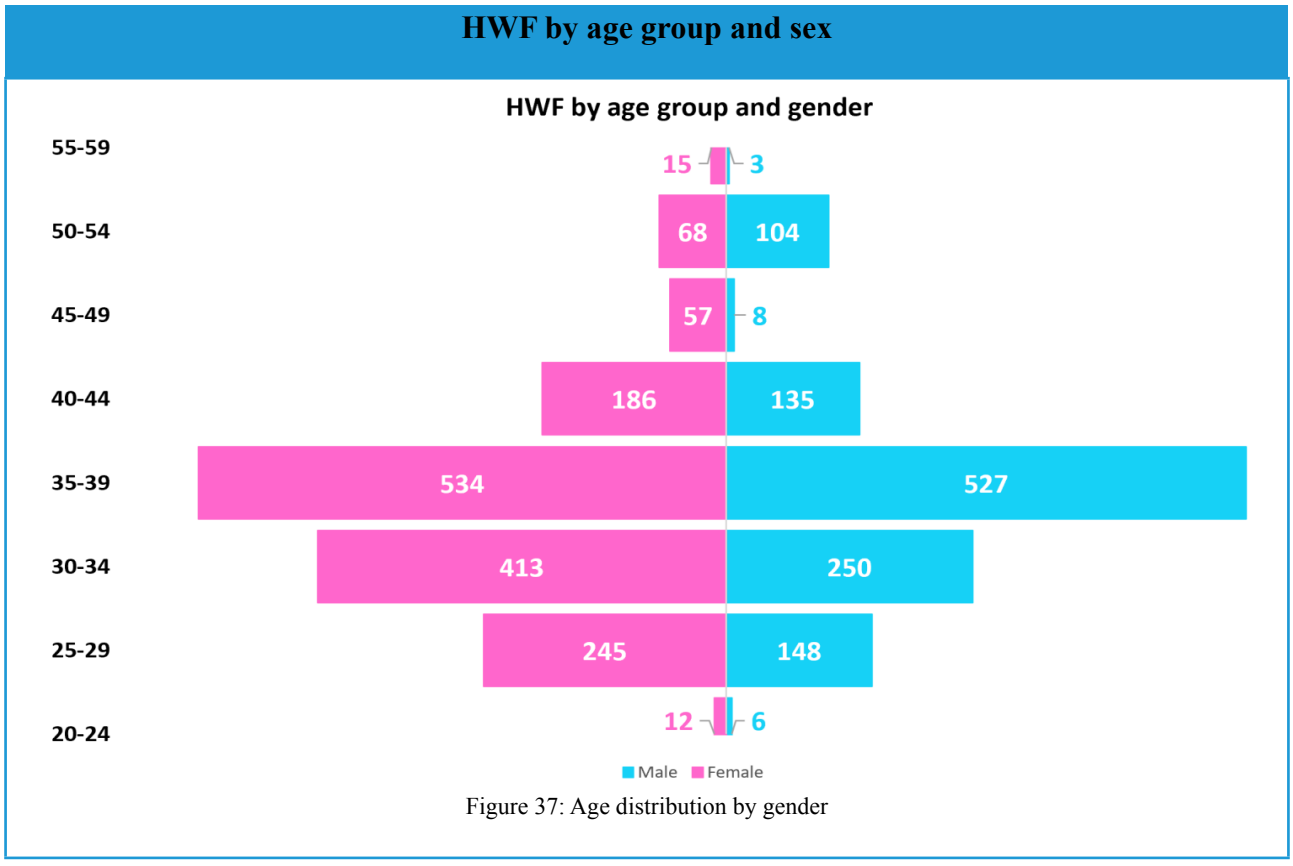


Figure 37: Age distribution by gender

Age of health workers

The average age of health professionals interviewed was 38 years, with administrative staff having the highest average age (40) while allied health professionals had the lowest average age (35). Most health workers surveyed were mid-level career professionals with the urgency to scale their professional actualization and fulfil their wants in life. Fig. 8 shows the ages by professional category.

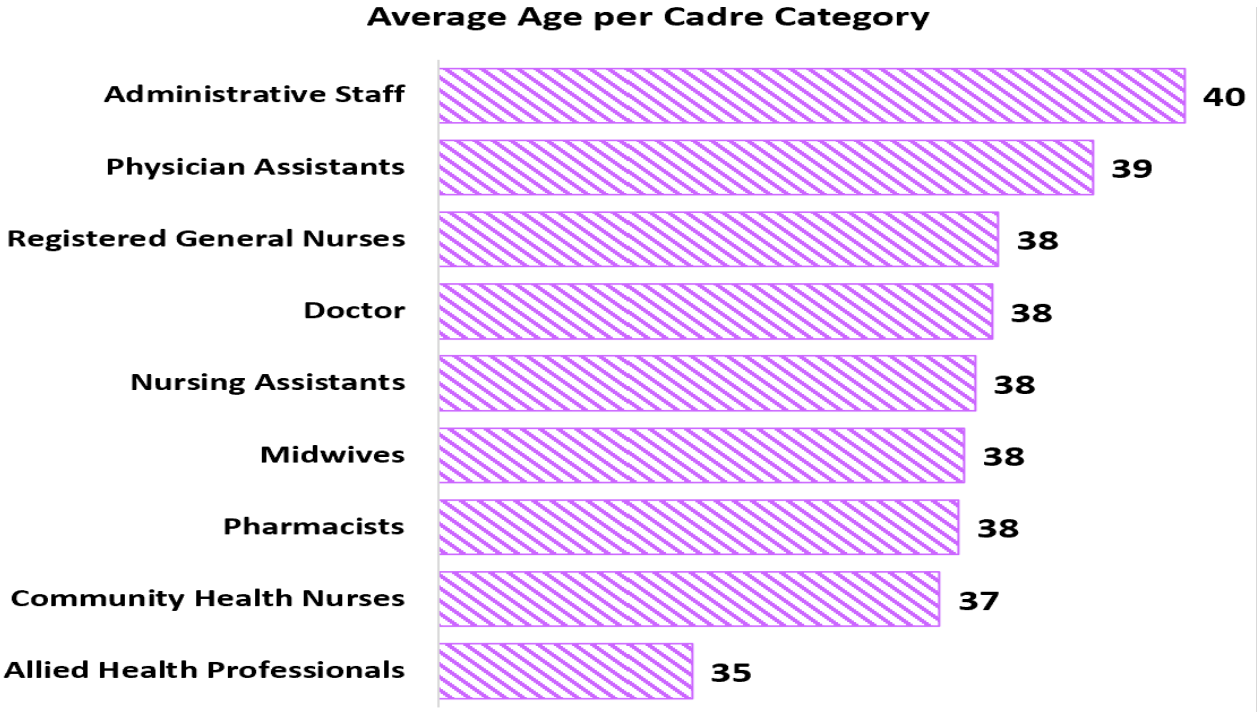


Fig. 38: Average age per cadre category

Type of employment

Most respondents (95.8%) were in full-time employment, while 1.9% were on contract employment and 0.9 % were part-time employed. It is worth noting that 1.4% were reported to be volunteering at the health facilities. Volunteers are trained health professionals who have not yet secured employment but work on a voluntary basis to keep abreast with their technical skills. It was also noted that part-time employment may include moonlighting health professionals who hold two or more jobs. These could be professionals in categories that are scarce on the market.

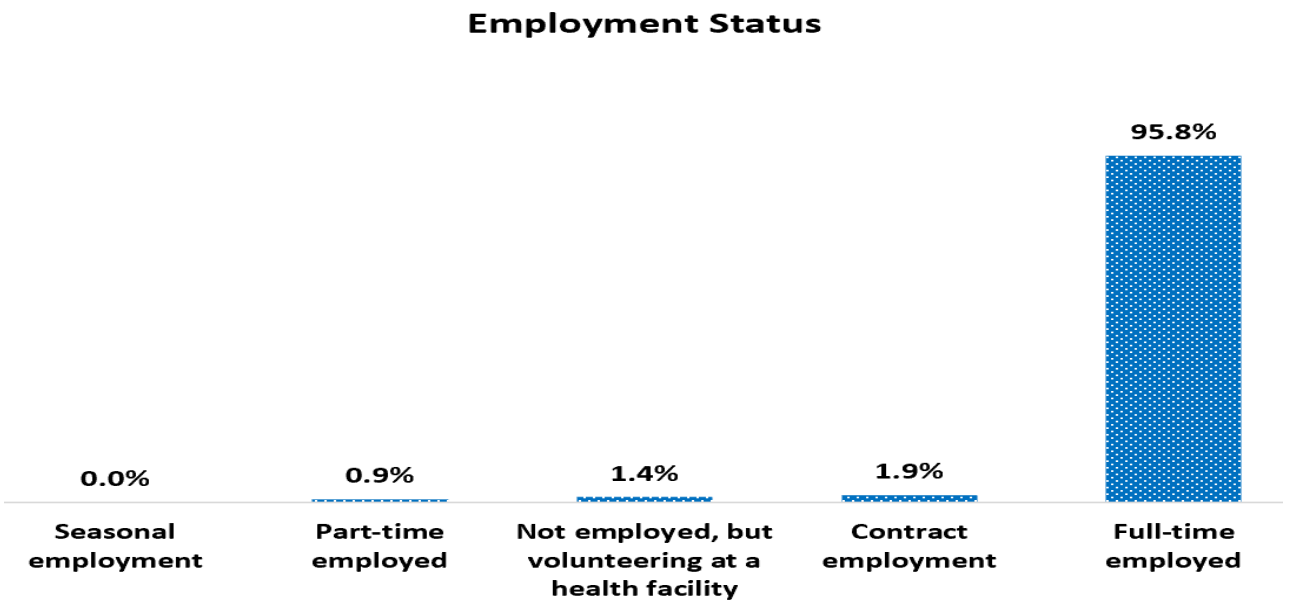


Fig. 39: Employment status

Distribution of workforce by sector

About 71.9% of the health workers were employed in the public sector, followed by 18.8% in faith-based health (private not-for-profit) institutions, 5.8% in quasi-health facilities and 3.5% in private health facilities. The majority (95.8%) of health workers surveyed were employed on a full-time basis. Amongst them, 70.2% were employed in the public sector, 18.5% in private not-for-profit faith-based outfits and about 5.5% in quasi health facilities. The private sector employed the least number of full-time employees (5.5%). Contract employment – the second highest form of employment with 1.9% of the total health workers surveyed – was highest in the public sector (0.9%) and private sector (0.6%) and relatively lower in private not-for-profit (faith-based) facilities (0.3%) and quasi (0.2%). It was established during the exploratory study that the private sector had the highest number of volunteering health workers (0.7%), while 0.5% were in the public sector. It is worth noting that public sector staff also comprised seconded staff from health development partners and agencies. See Table 25 below

Table 25: Employment status versus employment sector

Employment status	Quasi	Faith-based (private not-for profit)	Private for-profit sector	Public sector
Contract employment	0.15%	0.29%	0.59%	0.88%
Full-time employed	5.48%	18.49%	1.65%	70.15%
Not employed, but volunteering at a health facility	0.11%	0.04%	0.74%	0.51%
Part-time employed	0.07%	0.00%	0.55%	0.26%
Seasonal employment	0.00%	0.00%	0.00%	0.04%
Grand total	5.81%	18.82%	3.53%	71.84%

Source: Exploratory survey data 2023

Category of cadres versus employment status

Allied health professionals constituted the highest (48%) number of full-time health workers followed by nursing assistants and registered general nurses (14%). The lowest number was pharmacists (1%). It was noted that allied health professionals did most of the volunteering, depicting either an oversupply of workers in the staff category or demand constraints in absorbing these workers. This also applied to the cadres on part-time employment.

Table 26: Category of cadres versus employment status

Employment status	Admin staff	Allied health pro.	CHN	Doctors	Midwives	Nursing assistants	Pharmacists	Physician assistants	Registered general nurses	Total
Contract employment	0%	2%	0%	0%	0%	0%	0%	0%	0%	2%
Full-time employed	4%	48%	4%	2%	7%	14%	1%	2%	14%	96%
Not employed, but volunteering at a health facility	0%	1%	0%	0%	0%	0%	0%	0%	0%	1%
Part-time employed	0%	1%	0%	0%	0%	0%	0%	0%	0%	1%
Seasonal employment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Grand total	4%	52%	4%	2%	7%	14%	1%	2%	14%	100%

Source: Exploratory survey data 2023

Distribution of respondents by facility type

Out of the 2720 health workers surveyed, 33.3% (906) were working in other health facilities, 26.4% in district hospitals, 22.2% in health centres, and 8.8% in teaching hospitals. Polyclinics and regional hospitals had 4.7% and 3.8% of the workforce respectively, while CHPS had 0.8% of respondents. The workers in maternity homes constituted 0.1% of the workforce. This can be seen on Fig. 40 below.

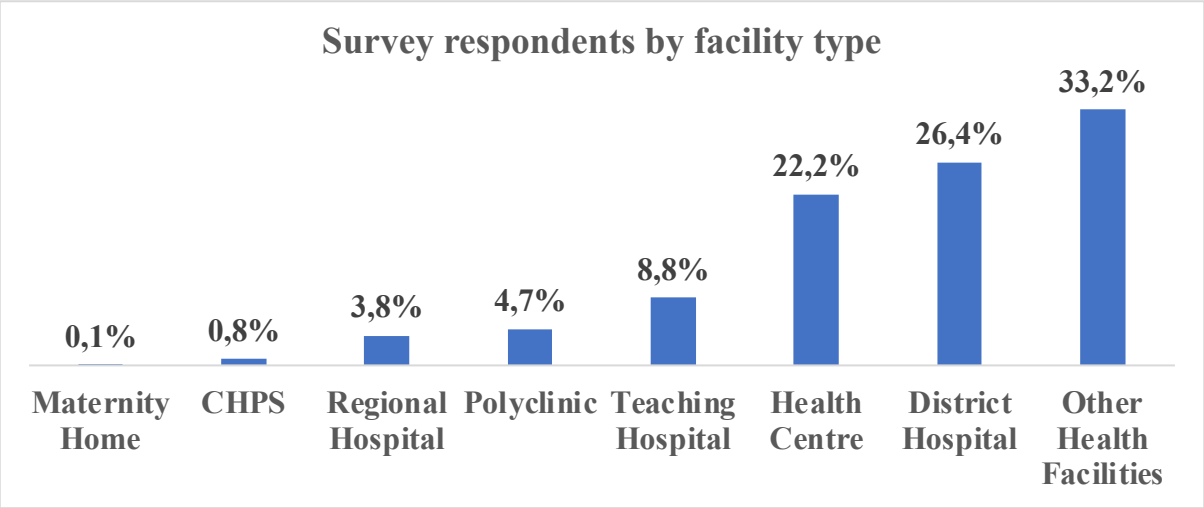


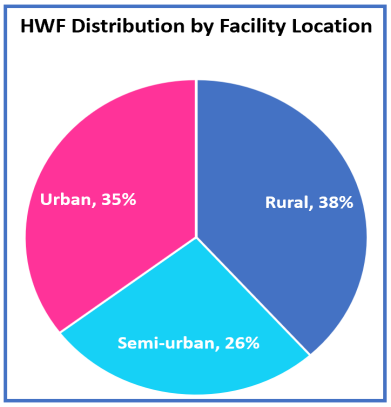
Fig. 40: Survey Respondents by Facility Type

6.3 FACILITY TYPE AND RURAL-URBAN DISTRIBUTION OF HEALTH WORKERS

6.3.1 Urban versus rural distribution of health workers

Out of the surveyed health workers, about 38% were in rural areas while 35% reported to be in urban areas. The remaining 26% were in semi-urban areas, as shown in Fig. 41. There was a slight difference between the concentration of health workers in urban and rural areas. The geographical equity in the distribution of health facilities and health workers needs to be rationalized.

Fig. 41: HWF distribution by facility location



6.4 INTENTION TO MIGRATE AMONG HEALTH WORKERS

6.4.1 Intent to migrate.

About 63% of the surveyed health workforce had intentions to migrate in the future, while 37% had no intention to migrate as shown in Fig. 42. About 38% of respondents had started working on their migration intention while 62% had not yet started working on their plans as shown on Fig. 43. Among health workers with intentions to migrate, about 34% were unsure when they would migrate, 26% intended to migrate within the next one to two years, and 26% intended to migrate within three to five years while 7% would want to migrate within seven years. It is worth noting that about 2% of respondents intended to migrate in less than six months while 6% wanted to migrate within a year. See Fig. 44.

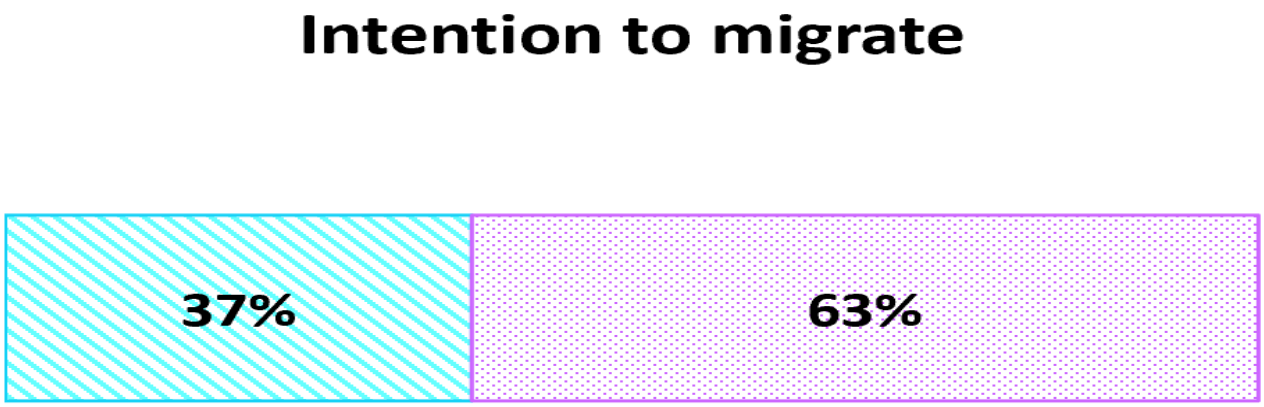


Figure 42: HWF intention to migrate

Fig. 43: Percentage of those who have started working on their migration plan

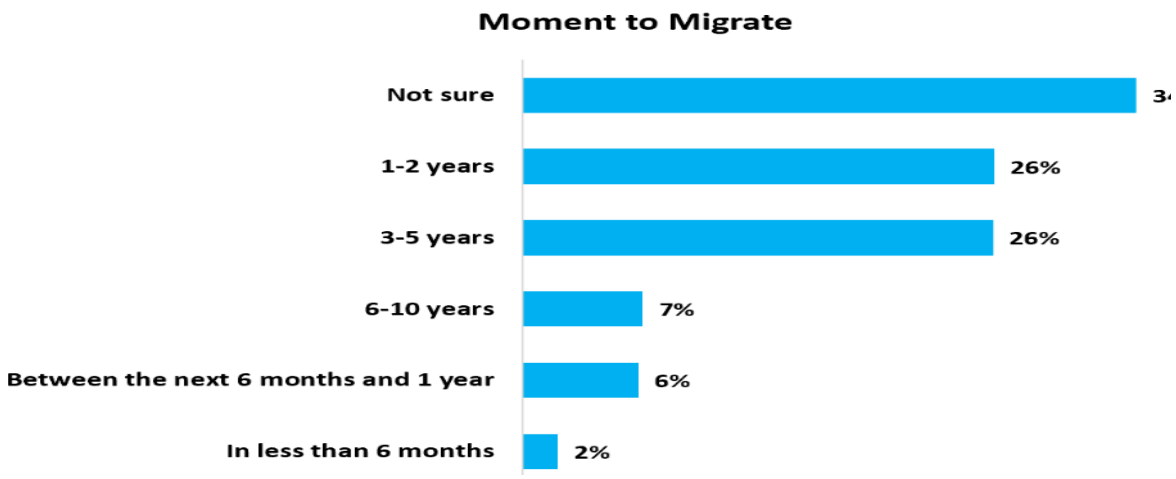


Fig. 44: Moment to migrate

6.4.2 Reasons to migrate abroad

Among the health workers interviewed, 55% intended to migrate for work and to practice their profession, while 43% intended to migrate to further their specialty training. About 2% did not provide their reasons for migration. See Fig. 45.

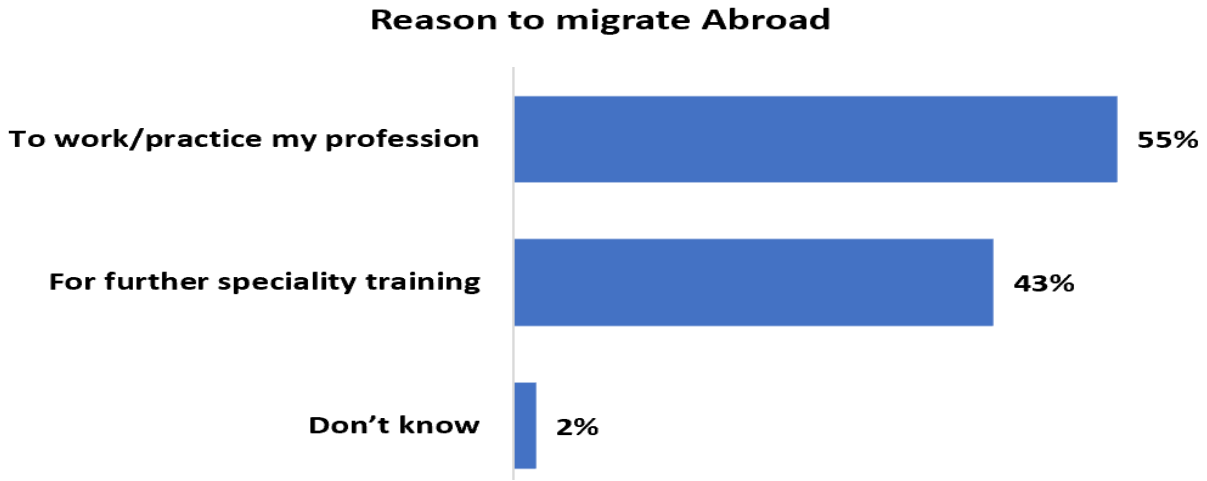


Fig 45: Reason to migrate abroad

Major destination areas

The major destination countries for Ghanaian health workers are Canada, the USA, the UK, Ireland and Australia, among many other destinations where smaller numbers go to. See Fig. 46.

Figure 46: Main destination countries

6.4.3 Intention to leave versus employment location

Most health workers with intentions to migrate were in rural areas. For example, about 14% of workers in rural areas stated that they would probably leave, against 13% and 12% in urban and periurban areas respectively. Also, among the health workers who reported that they would leave, 8% were in rural areas, 7% in urban areas and 3% in periurban areas. It was generally observed that health workers in periurban areas had less migration intentions than those in urban and rural areas, possibly indicating that these workers enjoyed more favourable working conditions than those in rural and urban areas. See Fig. 47 below.

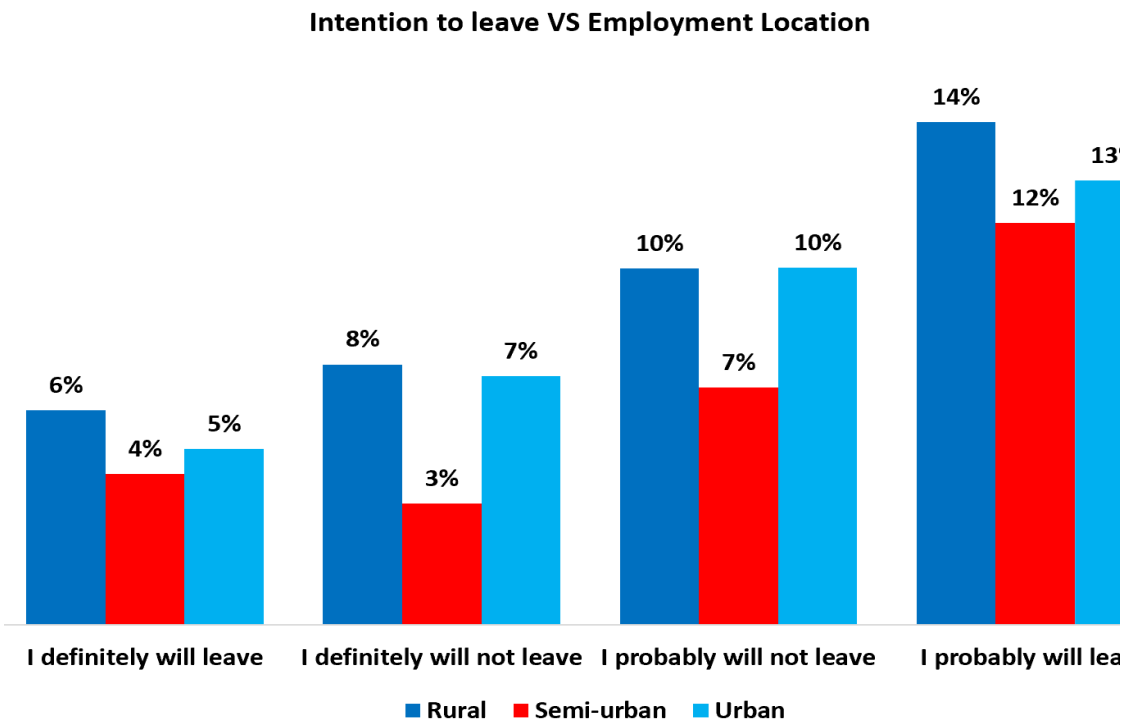


Figure 47: Intention to leave versus employment location

6.5 PREDICTORS OF INTENTION TO MIGRATE

About 39% of the respondents indicated that they were seriously considering leaving in the future, while 18% were presently looking and planning to leave. In contrast, 35% of health workers intended to stay in their current facility while only 8% were unlikely to leave their current facility (Fig. 48). It was also observed from the exploratory study that about 41% of the health workers preferred to continue working with their facility while 30% preferred not to continue working in their facility. Also, 18% of the workers would likely continue working at their facility while 11% preferred not to work at their facility.

Fig. 48: Feeling about leaving the facility (employment)

6.6 INCOME AND WAGE EXPECTATIONS OF GHANAIAN HEALTH WORKERS

Findings from the exploratory study established that the average self-reported current income of health workers studied was approximately 2813 Ghana cedis while their reservation wage was 3000 Ghana cedis. This implies that the health workers were on average earning less than their reservation wage. The difference between what the health workers were earning and the minimum they would accept if they were still unemployed was 187 cedis. It is worth noting that when disaggregated by category, there were significant variations across cadres (Fig. 49).

The transfer wage (the pay that discourages health workers from seeking jobs elsewhere) was found to be 5000 Ghana cedis. The potential retention gap, which is the difference between health workers' current income and their transfer wage, was 2187 Ghana cedis. Any retention strategies in the future would therefore need to gradually close this 2187 cedis gap. The average migration wage to regional and international destinations was reported to be 10 000 Ghana cedis. Fig. 49 summarizes the average wage expectations of health workers.

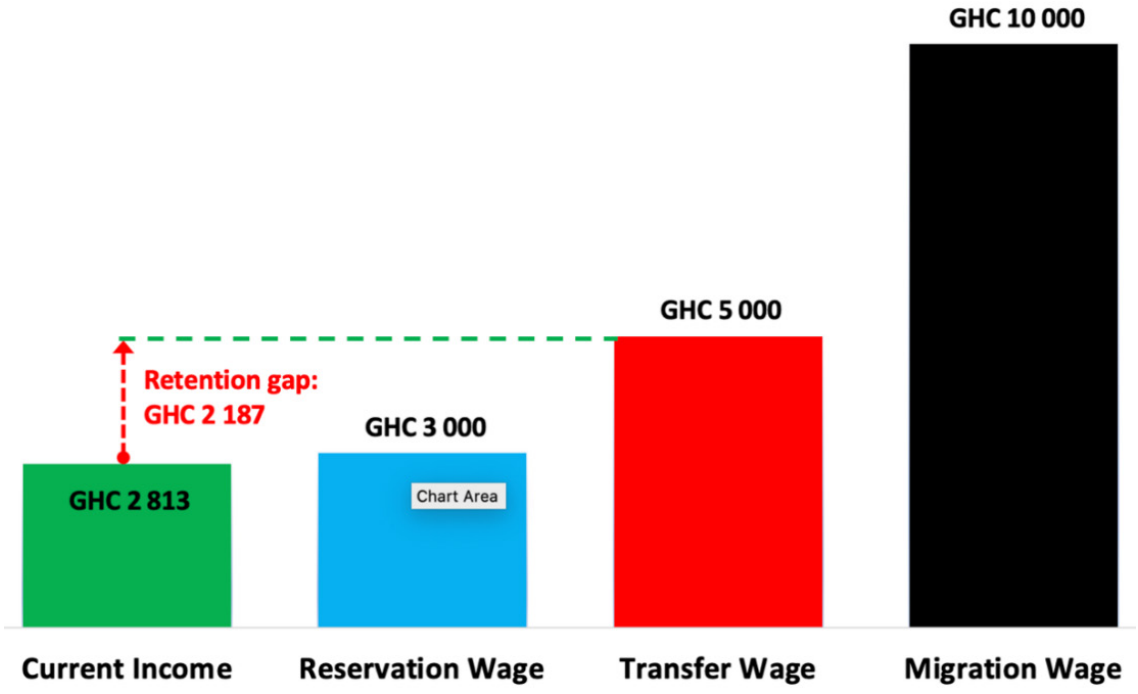


Fig. 49: Current earnings, reservation, transfer and migration wage (HWF) – retention gap

Among the surveyed health workers, it was observed that none had reached their transfer wage. For example, the self-reported income of doctors was 8000 Ghana cedis while their transfer wage was reported to be 15 000 cedis. Registered general nurses reported their income to be 2800 cedis against a transfer wage of 5000 cedis. The current reservation and transfer wage for selected categories studied are summarized in Fig. 50.

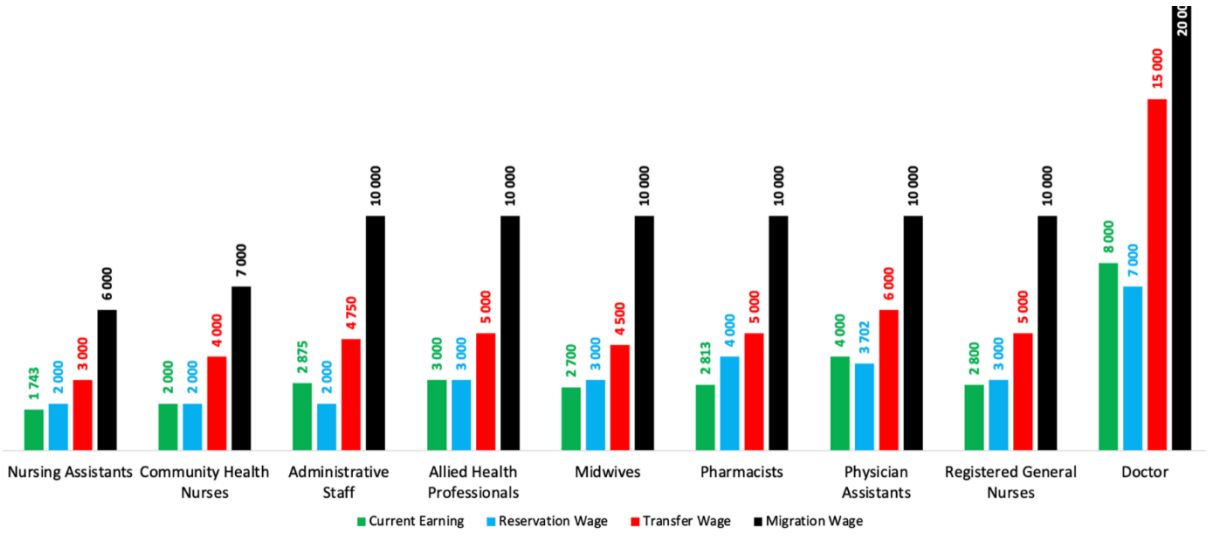


Fig. 50: Current earnings, reservation, transfer and migration wage by cadre

6.7 HEALTH WORKERS' PERSONAL EXPENDITURE COMPARED WITH CURRENT AND EXPECTED INCOME

Health workers' average monthly expenditure was reported to be 2850 Ghana cedis, compared with monthly earnings of 2813 cedis. Their monthly expenditure exceeded their monthly earnings by 37 cedis, as shown on Fig. 51. This possibly infers that health workers were not earning a living wage and possibly would not have savings from income but rather a cumulative deficit.

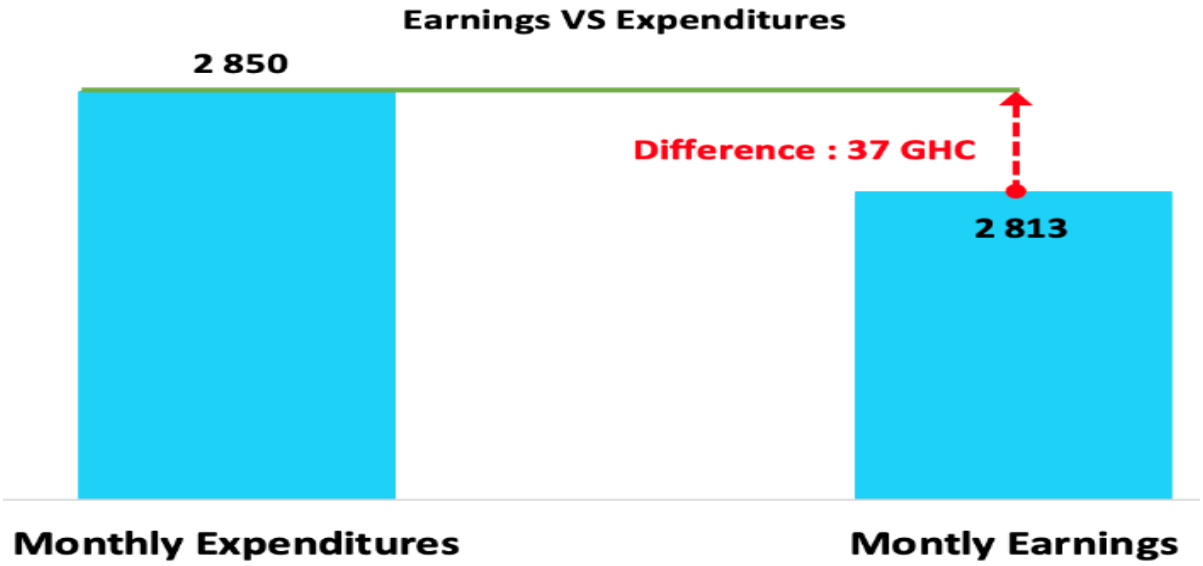


Fig. 51: Monthly earnings versus monthly expenditures

Monthly earnings versus monthly expenditure by cadre: From the exploratory study, it was established that pharmacists, nursing assistants, allied health professionals, administrative staff and midwives earned below their monthly expenditure, resulting in monthly expenditure deficits. However, registered general nurses, physician assistants and doctors were earning above their monthly expenditure, potentially leading to savings as shown on Figure 52 below.

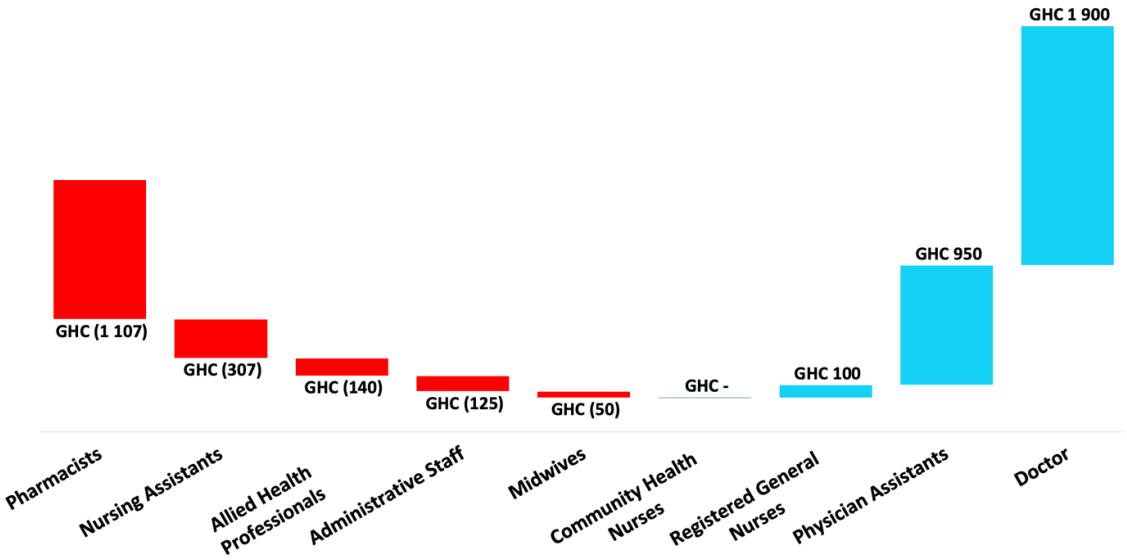


Figure 52: Monthly earnings versus monthly expenditure (by cadre)

6.8 SELF-REPORTED LEVELS OF PRODUCTIVITY AND ABSENTEEISM

The self-reported job performance of health workers was 82% in the last 30 days and 81% in the last six months. The self-productivity gap ranged from 18% to 19%. Efforts should be made to improve productivity levels to 100%. Health workers rated the performance of their colleagues at 74%, meaning that productivity levels for health workers could be anywhere between 74% and 82%, as shown on Fig. 53.

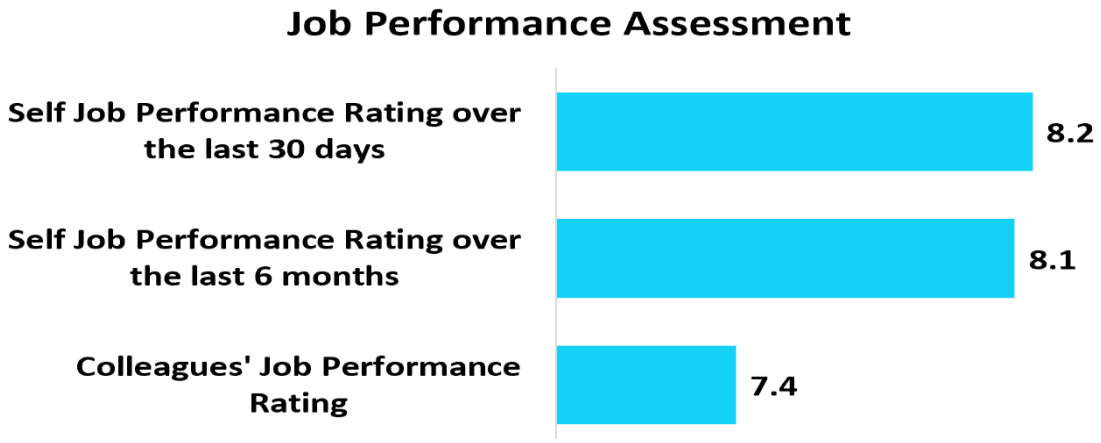


Fig. 53: Self-reported job performance.


UTION B
AUGUST, 2019

Section 7:

CONCLUSION AND RECOMMENDATIONS

The 2023 population need-based requirement for the health workforce in Ghana was 367 118 health professionals across 69 occupations. With a supply of 294 389 workers, the country had at least 80% of the workforce required to cover 98% of the disease burden if all the available health workers were employed. Given an overall shortfall of 72 729 health professionals, the country will only meet 93.7% of the need by 2027 if the supply pipeline remains constant. The need-based shortage of 28 409 would likely be addressed by 2032.

The demand for health workers in 2022 corresponded to only 43.4% of supply. The country's demand was weaker than supply leading to an estimated 40% unemployment. Also, while the need-based workforce requirement was not fully met, fiscal constraints had limited demand capacity resulting paradoxically in the unemployment of health workers. The country therefore faces a complex phenomenon of labour market failure characterized by high unemployment.

Available evidence raises concerns about equitable distribution, despite a high aggregate density of health workers. Ghana's UHC index of 48 raises other concerns including effective utilization, and productivity of the current workforce, particularly considering that a significant proportion of health workers remain unemployed.

Optimizing health workforce management for productivity and accountability

The HLMA sought to determine the nature of the interaction and complementarity among the public, private, and quasi-governmental, as well as with health partners, and how this could be improved in terms of planning, accreditation, training, recruitment, and deployment of the health workforce.

Stakeholder coordination in Ghana was at two levels: directors and technical working group. These mechanisms were designed to discuss high-level policy and strategy issues in order to build consensus around and disseminate health workforce related policies and strategies. However, these coordination mechanisms operated on an ad hoc basis due to logistical and other constraints and require additional effort to institutionalize them.

The stakeholder analysis revealed interactions between the government and stakeholders on **education and training, generation of demand, distribution and utilization of health workers.** However, these interactions were not well coordinated, and processes lacked integration.

The process requires improvement through regular dialogue and integration of procedures, as appropriate. Also, there was room for improving labour relations through increased engagement between the government and labour unions.

MoH should consider setting up a national health workforce management committee to oversee health workforce management in the country. The committee's membership should comprise senior officials of MoH, its implementing agencies, and those of GAQHI, PHFAoG, and other MDAs involved in health.

Optimizing health workforce education and training

The ministry sought to establish policy interventions on how to improve health workforce development and distribution (deployment, recruitment, and retention) while ensuring that the health workforce had the right skills towards the attainment of UHC and the SDG health-related goals.

Summary of evidence

Despite progress and investment made towards the production and training of the health workforce, the training output is, in some instances, not aligned with the country's needs. As a result, Ghana has more medical specialists than generalists. For example, the number of registered medical specialists increased by 35% from 761 in 2022 to 1030 in 2023.

Also, the training of specialists is skewed in favour of certain staff categories. For example, the Medical and Dental Council records showed that 130 and 199 obstetrics and gynaecological specialists were registered in 2022 and 2023 respectively while there were no registrations for some specialist programmes such as community dentistry, oral and maxillofacial radiology, implant dentistry and general dental practice (family dentistry).

This was not limited to medical professionals only, as other health professions were also experiencing skewed output. For example, the number of pharmacists increased significantly from 280 in 2018 to 503 in 2022, representing a nearly 80% growth rate. Similarly, the number of pharmacy technicians steadily increased from 126 in 2018 to 480 in 2022, a growth rate of approximately 281%. However, available data showed that for pharmacist specialists, there were no additional graduates throughout the period.

Additionally, there were limited avenues for the training of health professionals in new and emerging service delivery areas and some post-basic training programmes were not tailored to the service delivery needs. Further, some categories of staff had an oversupply: for example, the effective supply of midwives which stood at 40 249 in 2022 was about 2.2 folds of the required 18 032 Midwives.

Proposed actions:

1 **MoH should consider rationalizing the production and training of health workers,** through strengthened coordination and collaboration of all stakeholders. This will foster better alignment between stakeholders involved in the training ecosystem and the needs of the population. MoH should foster regular communication, multisectoral partnerships, and joint planning to ensure that the skills and competencies of health workers match the requirements of the health sector and the population.

2 **MoH should conduct further studies to generate evidence and utilize the findings** from studies such as the HLMA for current and future population need-based health workforce requirements to guide the development of targeted training programmes and workforce distribution strategies for skills in short supply.

3 **Efforts should be made to increase the availability of training programmes for health professionals** in new and emerging areas of service delivery. MoH should consider collaborating with educational institutions and professional bodies to develop and accredit programmes that address evolving health sector needs. Additionally, Ghana may consider providing incentives or scholarships to encourage health professionals to pursue training in underserved or high-demand professional categories.

4 **Efforts should be made to explore opportunities for international collaborations and partnerships to address the shortage of health professionals in specific specialties.** MoH should seek collaborations with international organizations, educational institutions, and professional associations to facilitate knowledge exchange and training opportunities.

Sustainable investment in health workforce employment

The HLMA sought to answer policy questions on how to address supply, demand, and need mismatches and improve overall health labour market absorption capacity for new graduates in Ghana while ensuring financial sustainability.

Summary of evidence: The total estimated stock of health workers in Ghana for 2022 was 298 382, distributed across 67 different categories of health care professions. Out of this total, 294 389 health workers (99%) were actively participating in the labour market (thus, they were either employed or looking for jobs). An estimated 118 488 (39.7%) of qualified health workers in the labour market were unemployed. Additionally, most medical doctors practicing in Ghana were specialists. The total number of medical doctors and dentists was 9347 (3.13%). Out of this, 5664 (60.60%) were specialists, 3481 (37.24%) were generalists medical practitioners and 202 (2.16%) were dentists.

The density of doctors, nurses and midwives per 10 000 population was 82.75 in 2022 which is above 49 per 10 000, the benchmark for inclusion on the WHO safeguard list.

However, Ghana's UHC index point of 48 was below the threshold of 55, hence its inclusion on the list. This density mirrored that of countries with a UHC index above 50. Given Ghana's UHC index, there are concerns about equitable distribution, effective utilization and productivity of the current workforce against the backdrop of a large proportion of unemployed health workers. Additionally, the workforce composition demonstrated an inappropriate skill mix both vertically (within occupations) and horizontally (across occupations).

The additional cost of need was anticipated to average 6.5% of GDP, while the additional cost of supply would likely average 6.5% of GDP. To meet the country's population health needs, it was established that Ghana required an HWF financing of US$ 59 per capita in 2022, which would likely increase to US$ 209 per capita spending on HWF by 2030, averaging about US$ 255 per capita during the period. See Table 15 above.

Proposed actions

1 **The Government of Ghana should increase its spending on the health workforce to at least US$ 59 per capita** at baseline and progressively increase it to US$ 209 per capita by 2030 to help the country increase its demand capacity and align it with the population health needs requirements.

2 **MoH should implement strategies to address the imbalance between medical specialists and general medical practitioners.** Deliberate short-term policies that provide incentives aimed at increasing the number of general medical practitioners should be instituted.

3 **In the short-to-medium term, MoH may consider developing and ensuring the implementation of policies** that explore opportunities for interprofessional collaboration and task shifting to optimize the utilization of available health professionals. MoH should provide its health professionals with opportunities for task shifting and allocate certain interventions to appropriately trained health professionals.

4 **Efforts should be made to attract and retain health professionals in rural,** remote and underserved areas, through the development and implementation of targeted recruitment and retention strategies that offer financial incentives, career development opportunities, and supportive working environments in rural and remote areas.

5 **MoH should engage the relevant stakeholders** to advocate for complete decentralization of employment and salary administration to address inequalities in health workforce distribution.

6 **MoH should establish a robust system for monitoring and evaluating the composition, distribution,** and productivity of the health workforce. A multidimensional productivity index (MPI) study should be undertaken to provide insights into areas that require intervention and inform evidence-based decision-making.

Sustainable management of health workforce migration

In relation to the policy question of how the migration of health professionals can be made optimally beneficial for both Ghana and the destination countries, the following evidence on migration was established and the subsequent recommendations are proposed.

Summary of evidence

There has been a rapid increase in health workers demanding permanent and temporary absence from work, indicating an increase in outmigration of health professionals from the country. Between 2021 and 2022, there was a 2.7-fold increase in overall attrition of health workers.

Vacation of post (the number of staff vacating their jobs without notice or approval) increased from 284 in 2021 to 1343 in 2023, representing a 473% increase. Within the same period, resignation increased by 300% from 79 to 242, while leave without pay also increased by 335% from 426 in 2021 to 1429 in 2023.

About 63% of the surveyed health workers had intentions to migrate in the future. Out of this, 38% had started working on their migration intention with 2% of respondents intending to migrate in less than six months, while 6% wanted to migrate within a year. About 26% intended to migrate within the next one to two years, 26% intended to migrate within three to five years, 7% would want to migrate in seven years and 34% were unsure when they would migrate. The transfer wage (the pay that prevents health workers from seeking jobs elsewhere) was found to be 5000 Ghana cedis.

The potential retention gap – the difference between health workers' current income and their transfer wage – was 2187 cedis. The average migration wage to regional and international destinations was reported to be 10 000 Ghana cedis.

Proposed actions

1 **Efforts should be made to improve working conditions and job satisfaction of health workers.** The government should implement strategies to improve working conditions. Factors such as workload, career development opportunities, work-life balance, reintroduction of the health sector employees' vehicle loan guarantee fund, and housing loan guarantee scheme should be considered.

2 **Government should revise health workers compensation packages** and make them more competitive with regional and international wages to retain health workers. As such, the government should aim to increase health workers' salaries and benefits to bridge the potential retention gap between their current income and the transfer wage.

Annex 1: HLMA questionnaire

	Questions	Responses
	Interviewer's full name	
	Name of facility	
	Designation	
	Prioritized cadre	
	Region of facility	
1	What cadre of health worker are you?	
2	Are you a specialist? Yes or no	
3.1	If yes to question 2, what specialty do you belong to?	
3.2	How many years have you been working as a specialist?	
4	How many years have you been working in your profession?	
5	What is your gender? Male Female Other	
6	What is your age (in years)?	
7	What is your current employment status? Permanent [ ] or Locum [ ] or Unemployed [ ]	
8	If you are currently working, who is your employer? Ownership: CHAG, GHS, MOH, Quasi, Faith-based, Private	
9	What type of health facility do you work in? CHPS, health centre, primary hospital, secondary, tertiary, quaternary	
10	Where is your facility located? urban , periurban, rural	
11	How much is your total earnings from this employment (salary and all allowances combined) per month?	
12	Choose the statement that most clearly reflects your feelings about your future with your employment organization. Extremely satisfied, satisfied, dissatisfied	
13	How do you feel about leaving your health facility? On a scale of 1 to 5, where 1 is very bad and 5 is very good. Provide specific interpretation for each point on the Likert scale to prevent ambiguity	
14	If you are free to choose, would you prefer to continue working with the health facility? Yes or No	
15	How important is it to you personally to continue to work with this health facility? On a scale of 1 to 5, where 1 is not very important, and 5 is very important	
16	Would you reapply for a job in your current employment? Yes or No Rather than this question we suggest: If you had the opportunity to change your career, how likely are you to change your career?.... Likert ...5 definitely .....1. I will not	

	Questions	Responses
17.1	Do you have any intention to migrate to another country? Yes No	
17.2	When do you intend to migrate abroad? ....this year Next year, the next five years	
17.3	Why do you intend to migrate abroad?	
17.4	Have you started working on your plans to migrate abroad? Yes , No	
17.5	How long have you been working on your plans to migrate abroad? less than a year, 1 year 2 years	
17.6	Which country are you likely to migrate to?	
18.1	If you were not yet employed, what would be the absolute minimum take-home monthly wage below which you would not even consider taking up a job/position in your professional field?	
18.2	If you are offered the same role in a different facility in Ghana, what is the absolute minimum take-home monthly wage that you will be prepared to quit your current job? In Ghana cedis	
18.3	If you are offered an opportunity to migrate abroad to work in your professional field, what is the absolute minimum take-home monthly wage that you will be prepared to quit your current job and migrate? US dollar.	
18.4	Comparing your current income with other civil servants (in other sectors with comparable training like you), on a scale of 1 to 5, how satisfied are you (not very satisfied to very satisfied)?	
18.5	On average, how much do you spend per month on housing/rent? 0–500, 500–1000, 1000–1500, 1500–2000, 2000–2500	
18.6	On average, how much do you spend per month on food? 0–500, 500–1000, 1000–1500, 1500–2000, 2000–2500,	
19.1	On average, how much do you spend per month on leisure and travel?	
19.2	On average, how much do you spend per month on transport to and from work?	
19.3	On average, how much do you spend per month on health care?	
20	How many days of work did you miss in the past 30 days? (Your off days or annual leave or maternity leave are not included)? reason	
21.1	On a scale of 1 to 5, where 1 is the worst job performance anyone could have at your ward/unit and 5 is the best performance of a top worker, how would you rate your job performance in the last six months?	
21.2	On a scale of 1 to 5, where 1 is the worst job performance anyone could have at your ward/unit and 5 is the best performance of a top worker, how would you rate your job performance in the last 30 days	
23	On a scale of 1 to 5, where 1 is very often and 5 is not very often, to what extent do workers miss their scheduled duty in your health facility? Reason	
24.1	What are the average monthly earnings (salary plus allowances and others including locum?) in your profession?	
24.2	What is the highest monthly earnings (salary plus allowances and other sources due to your profession ?) in your profession that you are aware of? If possible, provide evidence.	
24.3	What is the minimum monthly earnings (salary plus allowances) in your profession that you are aware of? If possible, provide evidence.	

	Questions	Responses
25	On a scale of 1 to 5, where 1 is very likely and 5 is not very likely, what is the likelihood of being unemployed among people in your profession? (Unemployment risk)	
26	On a scale of 1 to 5, where 1 is very likely and 5 is not very likely, what is the likelihood of you losing part of your pay to the extent that it can compromise your standard of living? (Probability of falling into extremely low pay) losing in what way?.. Can we be specific?	
27	If you were receiving very low pay, given your skills, on a scale of 1 to 5, where 1 is very likely and 5 is not very likely, what is the likelihood of getting better pay? Is it in the same employment? Or another? Or in another role in the same profession? (Probability of getting out of extremely low pay)	
28	On a scale of 1 to 5, where 1 is very high and 5 is very low, what is the extent of time pressure on you from work? (Time pressure at work) kindly explain the Likert scale	
29	On a scale of 1 to 5, where 1 is very high and 5 is very low, to what extent do you feel your work impacted your health? (Physical health risk factors)	
30	On a scale of 1 to 5, where 1 is very low and 5 is very high, to what extent do you have autonomy in your work? (Work autonomy) what does this mean? Need to explain what it means ...also explain the Likert scale	
31	On a scale of 1 to 5, where 1 is very low and 5 is very high, to what extent have you gotten or are likely to get opportunities to learn through your work? (Learning opportunities)...Does in-service training qualify? Or do the learning opportunities here imply study leave for further studies? Scholarships?	
32	On a scale of 1 to 5, where 1 is very bad and 5 is very good, how well have you built good relationships with colleagues at work?	
33	On average, how many hours do you work in a week? 20–30, 30–40, 40–50, 50–60	

Annex 2: Regulatory agencies and their programmes

Regulator	Programmes
Allied Health Professions Council	Audiology
Allied Health Professions Council	Dental surgery technology
Allied Health Professions Council	Dental technology
Allied Health Professions Council	Diagnostic radiography
Allied Health Professions Council	Dietetics
Allied Health Professions Council	Disease control
Allied Health Professions Council	Dispensing optics
Allied Health Professions Council	Environmental health
Allied Health Professions Council	Health information management
Allied Health Professions Council	Health promotion
Allied Health Professions Council	Medical laboratory science
Allied Health Professions Council	Medical physics
Allied Health Professions Council	Mental health
Allied Health Professions Council	Nuclear medicine
Allied Health Professions Council	Nutrition
Allied Health Professions Council	Occupational therapy
Allied Health Professions Council	Optometry
Allied Health Professions Council	Physiotherapy
Allied Health Professions Council	Prosthetics and orthotics
Allied Health Professions Council	Respiratory therapy
Allied Health Professions Council	Sonography
Allied Health Professions Council	Speech and language therapy
Allied Health Professions Council	Therapy radiography
Allied Health Professions Council	Trauma and Orthopaedic
Medical and Dental Council	Certified registered anaesthesiologist
Medical and Dental Council	Dental
Medical and Dental Council	Medical
Medical and Dental Council	Physician assistants
Nursing and Midwifery Council	Critical care nursing
Nursing and Midwifery Council	Ear, nose and throat nu
Nursing and Midwifery Council	Emergency nursing
Nursing and Midwifery Council	Nurse assistant clinical
Nursing and Midwifery Council	Nurse assistant preventive
Nursing and Midwifery Council	Nurse practitioner
Nursing and Midwifery Council	Ophthalmic nursing
Nursing and Midwifery Council	Paediatric nursing
Nursing and Midwifery Council	Perioperative nursing
Nursing and Midwifery Council	Post nurse assistant clinical /nurse assistant preventive midwifery
Nursing and Midwifery Council	Public health nursing
Nursing and Midwifery Council	Registered community nursing /registered public health nursing
Nursing and Midwifery Council	Registered community psychiatric nursing
Nursing and Midwifery Council	Registered general nursing
Nursing and Midwifery Council	Registered mental nursing

Regulator	Programmes
Nursing and Midwifery Council	Registered midwifery
Nursing and Midwifery Council	Registered paediatric nursing
Pharmacy Council	Pharmacy
Psychology Council	Clinical psychology

Annex 3: HLMA committees

Planning committee

S/ No.	Name	Institution
1	Alhaji Hafiz Adam	MoH
2	Dr Kwesi Asabir	MoH
3	Agyemang Karikari Marfo	MoH
4	Mr Peter Obiri-Yeboah	Ghana Health Service
5	Ms Ekui Dovlo	Ghana Health Service
6	Richmond Sowah	Ghana Health Service
7	Dr James Antwi	Consultant

Technical working group /team

S/N	Name	Institution
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2	Agyemang Karikari Marfo	MoH
3	Dr James Antwi	Consultant
4	Mr Samuel B. K. Nugblega	CHAG
5	C/Supt/Dr Frank Duodu	Ghana Police Hospital
6	Mr Francis Kyereboah	University of Ghana Medical Centre
7	Mr Said Al-Hussein	HR. Expert
8	Dr Thomas Peprah Agyekum	School of Public Health, KNUST

S/N	Name	Institution
9	Ms Ekui Dovlo	Ghana Health Service
10	Pastor Anthony Oduro	Komfo Anokye Teaching Hospital
11	Mr George Yeboah	MoH
12	Dr Adwoa Twumwaah Twum-Barimah	WHO
13	Mr Obeng Asomaning Williams	Mental Health Authority
14	Dr James Avoka Asamani	AFRO

Data validation team

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3	Dr James Antwi	Consultant
4	Mr Samuel B. K. Nugblega	Christian Health Association of Ghana
5	C/Supt/Dr Frank Duodu	Ghana Police Hospital
6	Mr Francis Kyereboah	University of Ghana Medical Centre
7	Mr Said Al-Hussein	HR. Expert
8	Dr Thomas Peprah Agyekum	School of Public Health, KNUST
9	Ms Ekui Dovlo	Ghana Health Service
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12	Dr Adwoa Twumwaah Twum-Barimah	WHO
13	Mr Obeng Asomaning Williams	Mental Health Authority
14	Dr James Avoka Asamani	WHO AFRO
15	Zanu Dassah	Ghana Health Service
16	Alidu Mohammed	Cape Coast Teaching Hospital
17	Ernest Ankamah Aikins	Ahmadiyya Muslim Mission Services
18	Mrs Georgina Yeboah	African Forum for Research &Education in Health
19	Francis Victor Ekey	HR Expert
20	Dr Joseph Marfo	Data Scientist Expert
21	Nana Osei Boateng	Representative, private universities
22	Frederick Amponsah	Ghana Health Service
23	Enyonam Ganyaglo	Mental Health Authority
24	Richmond Doe Sowah	Ghana Health Service
25	Ann Sena Fordie	Mental Health Authority
26	Paul Baffoe-Bonne	37 Military Hospital
27	Captain Mawulolo Klu	37 Military Hospital
28	Dr Papa Kojo Mbroh	Cape Coast Teaching Hospital
29	Denicia H. Moro	Cape Coast Teaching Hospital
30	Dr Ruby Arthur	Ghana Health Service
31	Ernest Prempeh Nkornu	Ghana Health Service
32	Richard Sarfo Ameyaw	Ghana Health Service
33	Dr Charles Osei Tutu Agyemang	Ghana Health Service

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35	Dr Martin Boamah	Ghana Health Service/WHO
36	Dr Rosaline N. Duke	Korle-Bu Teaching Hospital
37	Dr Petit Amenuveve Kpe	CHAG
38	Mr Samuel Atweri Akotua	MoH
39	Ms Vera Antwi Amamoo	Nursing and Midwifery Council
40	Ms Rejoyce Sam	Medical and Dental Council
41	Ms Anna Plange	Ghana Psychology Council

Agencies and institutions

S/No.	Institutions
1	World Health Organization
2	Ghana Police Service
3	University of Ghana Medical Centre
4	Kwame Nkrumah University of Science and Technology
5	Komfo Anokye Teaching Hospital
6	Mental Health Authority
7	Cape Coast Teaching Hospital
8	Ahmadiyya Muslim Mission Services
9	Ghana Arm Forces
10	Korle-Bu Teaching Hospital
11	Nursing and Midwifery Council
12	Medical and Dental Council
13	Christian Health Association of Ghana
14	Allied Health Professions Council
15	Ghana Psychology Council
16	Pharmacy Council
17	Ghana Ambulance Service
18	Veterinary Service
19	Quasi-Government Health Facilities Secretariat
20	Private Health Facilities Association of Ghana
21	Ministry of Finance
22	Ministry of Education

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