Health Workforce (HWF) Unit, Universal Health Coverage – Life Course Cluster (ULC)

Key findings of need-based health workforce requirements to address Africa's disease burden and demographic evolution

Rationale

The African region has experienced a 19% increase in health workforce numbers from 4.3 million in 2018 to 5.1 million in 2022 following adopting the African Regional framework for implementing the Global Strategy on Human Resources for Health: workforce 2030. However, low health worker densities remain, and significant disease burdens persist in the region. Policymakers have recognized the crucial importance of evaluating the health workforce in relation to the population's health needs. This assessment is essential to identify gaps and determine the appropriate mix of health workers required to effectively address the region's complex and evolving health challenges. This need-based analysis forms a part of the systematic process of understanding dynamics.

Key messages

- 9.75 million was the need-based requirement for health workers in 2022 and 11.8 million will be required by 2030 to effectively tackle the Region's disease burden.

- The shortage of health workers is anticipated to be about 6.1 million by 2030, with 87% (5.3 million) of the shortage being for doctors, nurses, midwives, pharmacists, and dentists.

- The needs-based requirement for health worker was driven by communicable diseases that contributed 47% of the need, non-communicable diseases (NCDs) that contributed 37% of the need, and injuries that contributed 16% of the need.

- Available health workers in 2022 covered less than 43% of the needs-based requirements and this will increase to 49% by 2030 based on the current trajectory.

- In 2022, US$20.85 billion (57%) of funding required for HWF employment out of US$36.3 billion was available.

- The total funding needed by 2030 to address the Region's HWF crisis is US$120.4 billion (training: US$22.58 billion; employment: US$97.83 billion).

- 49% of countries can enhance HWF investment by prioritising HWF development within existing health budgets.

- 51% of countries can enhance HWF investment by ensuring efficiency gains and better prioritisation of the health sector within government budgets.

Background

The 2021 Universal Health Coverage (UHC) monitoring reported substantial improvements in service coverage from 2000 to 2021, although the African Region still lags with significant unmet health needs. Over the past two decades, substantial investments in training and educational infrastructure have markedly increased the number of health professionals trained annually, significantly boosting HWF availability. A critical shortage of health workers remains, with projected deficits varying greatly depending on the estimation methods and quality of data. This study addresses the urgent need to estimate the health workforce against the region's disease burden and essential package of health services, aiming to determine the required workforce and necessary investments to meet health needs effectively.

Brief Overview of concept and methodology

A comprehensive methodology is applied to assess three key aspects:

> 1) HWF needs based on population health,
>
> 2) the current HWF stock and supply, and
>
> 3) the investment required to bridge any identified gaps.

The analysis utilized previously validated models adapted to define the HWF needs by aligning them with the population's inherent "need for health services." This need was further interpreted through the lens of universal health coverage (UHC) aspirations.

The conceptual framework explored the HWF needs by considering demographic data, disease prevalence, required health interventions, and interdisciplinary professional standards. These parameters were used to estimate the HWF requirements, with a sensitivity analysis to provide minimum and maximum scenario ranges around the base-case projections.

The pool of qualified health workers (the overall stock) comprised the 'licensed to practice' practitioners with various employment and unemployment statutes. A stock and flow model was formed to analyze workforce dynamics, factoring in both inflows from training and immigration and outflows like retirement, emigration, and career changes.

The financial implications were assessed by comparing HWF needs with the existing and anticipated supply to identify any shortages, surpluses, or balances. This involved estimating the costs of resolving these mismatches and comparing them with the financial resources available for health workforce planning and development.

Findings

3.1 Regional needs-based requirements for health workers (2022-2030):

Initially requiring 9.75 million health workers in 2022, the African Region will need 11.82 million by 2030. This includes the community health workers.

By Type of HWF,

Medical doctors:

- Estimated 1 million medical doctors needed in 2022, with an expected 24% increase to 1.3 million by 2030. Among them, 47% were needed as generalist medical practitioners in 2022, with a slight decrease to 46% by 2030.

Pharmacists and technicians:

- Around 160,000 pharmacists were needed in 2022, with a projected increase of 16% to 185,000 by 2030.
- About 128,000 pharmaceutical technicians and assistants were needed in 2022, with their numbers expected to rise by 21.4% to approximately 155,334 by 2030.

Nursing and midwifery personnel:

- A minimum of 5.1 million nursing personnel was needed in 2022, with numbers projected to increase by 22% to 6.3 million by 2030.
- At least 880,000 Midwifery personnel were needed in 2022, expected to grow by 19% to reach 1 million by 2030.

Laboratory personnel:

- 343,000 laboratory personnel were needed in 2022, with a 24% increase projected to 423,000 by 2030.

Community Health Workers (CHWs):

- 11% of the overall HWF requirement was for CHWs in 2022, totalling about 1.1 million. It is anticipated to rise by 19% to 1.3 million by 2030.

3.2 Estimated densities per 10,000 population for selected occupations:

- Country-specific HWF density estimates were derived, allowing for nuanced planning and dialogue tailored to each country's economic conditions and health service demands.
- The analysis shows variations in HWF needs per 10,000 population across countries.

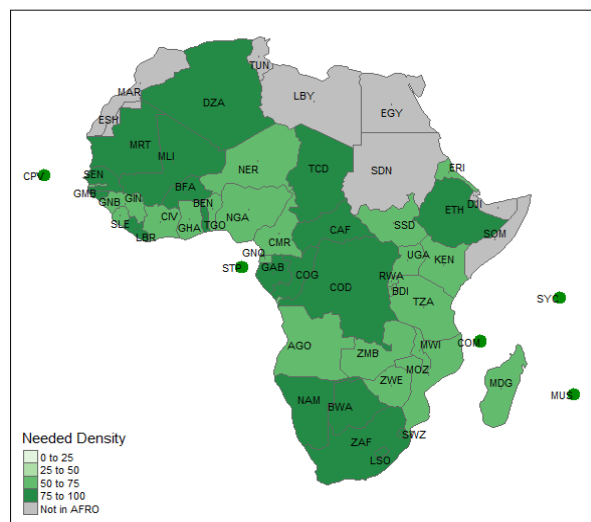| Type	Highest country	Highest density	Lowest country	Lowest density
Dentist	Eswatini	1.32	Seychelles	0.68
Generalist Medical Practitioners	Mauritius	7.3	Eritrea	4.35
Specialist Medical Practitioners	Mauritius	12.36	Burundi	5.04
Nursing Professionals	Mauritius	86.94	Madagascar	31.74
Midwifery Personnel	Sao Tome and Principe	14.1	Mauritius	6.88
Pharmacists	Mauritius	3.94	United Republic of Tanzania	0.94
Laboratory Personnel (Medical and Pathology Laboratory Technicians)	Burundi	6.04	Eritrea	1.04

Table 1: Estimated density per 10,000 population (highest vs lowest countries) *(source: WHO)*

Figure 1: Density of estimated HWF needs-based requirements *(source: WHO)*

3.4 Rate of increase in the need for health workers:

- The need for health workers in the African Region is expected to grow significantly, outpacing population growth, with variations observed across different countries.
- The highest needs-based increases were noted in Burundi (29.7%), Mauritania (42.9%), Namibia (43.7%), and Rwanda (45.9%).

3.5 Impact of evolving disease burden on needs-based HWF requirements:

- Changes in disease prevalence significantly influence the increasing need for health workers, with communicable diseases, NCDs, and injuries driving specific workforce demands.

- A regression analysis showed that population growth alone accounts for only 33% of the variations in the need for health workers, while 67% is influenced by other factors including disease burden, with communicable diseases contributing 47%, NCDs 37%, and injuries 16% of the requirements.
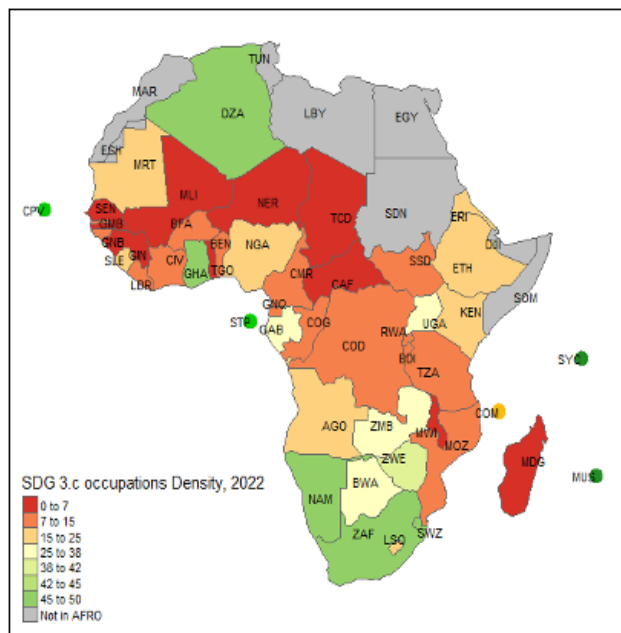

Figure 2: Density of SDG 3.c tracer occupations per 10,000 population 2013–2022. *SDG 3.c Tracer occupations are doctors, nurses, midwives, dentists, and pharmacists combined. (*Source: WHO NHWA data – Latest years data used. Accessed 2 February 2024.*)

4.1 Stock and density of health workers

- From 2013 to 2022, the number of health workers in the African Region tripled from 1.6 million to 5.1 million due to improved data availability and expanded training outputs. Nurses made up 33.3% of the workforce, CHWs 16.7%, and medical doctors 7.2%.

4.2 Projected HWF stock 2026 and 2030

- The African Region is expected to increase its health workforce by nearly 1.7 million by 2030, with a projected total of 3.5 million for SDG 3.c tracer occupations (medical doctors, nurses, midwives, pharmacists, and dentists), marking a 37% increase over eight years.

- Kenya, Liberia, Seychelles, and South Africa are expected to experience a decline in their stock of practising health workers, particularly among nurses and midwives if the current trajectories continue.

- Conversely, 30 countries (64% of the region) are expected to see their HWF grow by more than 30% by 2030.

4.3 Need-based HWF shortage in the African region

- In 2022, the need-based shortage of health workers is 5.6 million.

- The need-based shortage will increase to 6.1 million by 2030. By then, the stock is expected to cover only 48% of the required health workforce.

- The detailed analysis showed that, in 2022, the stock only covered 11.5% of the regional need for specialist medical practitioners, 24.1% for nurses, 38.1% for midwives, and 31.5% for dentists. These disparities are projected to persist into 2030, with varied coverage rates ranging from 36% for nurses to 51% for dentists.

- African Region will need to at least double its 2022 HWF stock, especially the SDG 3.c tracer occupations if the disease burden and growing population health needs are to be effectively addressed.

4.4 Scenario analysis for addressing the needs-based HWF shortage in 2030:

- Scenario analysis suggests that improving training output and absorption rates could significantly mitigate the projected needs-based shortage, potentially reducing it by up to 26% if training outputs are increased by 40% and absorption rates from the current 70% to at least 90%.

African Region will need to at least double its 2022 HWF stock, especially the SDG 3.c tracer occupations if the disease burden and growing population health needs are to be effectively addressed.

5.1 Ballpark estimates of potential financing envelope for HWF employment

- In a "business as usual" scenario, the projected HWF budget for the African Region could grow from US$20.85 billion in 2022 to US$31.81 billion by 2030. Public sector funding alone will result in a growth from US$14.17 billion in 2022 to US$20.67 billion by 2030.

- Under "HWF prioritization" and "Health Prioritization" scenarios, the financing envelope could potentially increase to US$44.86 billion and US$55.32 billion by 2030, respectively, indicating substantial growth with strategic prioritization.

5.2 Overall funding gaps for HWF Investments to reduce shortage by half

- The region faced a significant funding deficit of 43% in 2022, translating to an unemployed health worker rate of 27% based on a subset of countries. To halve the current health worker shortage by 2030, an estimated US$120.41 billion is needed, with 18.75% for training and 81.25% for employment.

- The investments required represent less than 2% of the GDP of countries in the region, indicating a feasible financial commitment relative to economic sizes.

5.3 Current levels of prioritization for health and HWF investments

- Countries in the African Region spend an average of 7% of GDP on health, with 43% of health expenditure dedicated to HWF remuneration. The level of prioritization varies widely, with nearly half the countries needing to better prioritize HWF within their health budgets.

- Four groups of countries are identified based on their prioritization levels, suggesting different strategies for enhancing HWF investments, ranging from better allocation within existing budgets to advocating for increased health budgets or external aid.
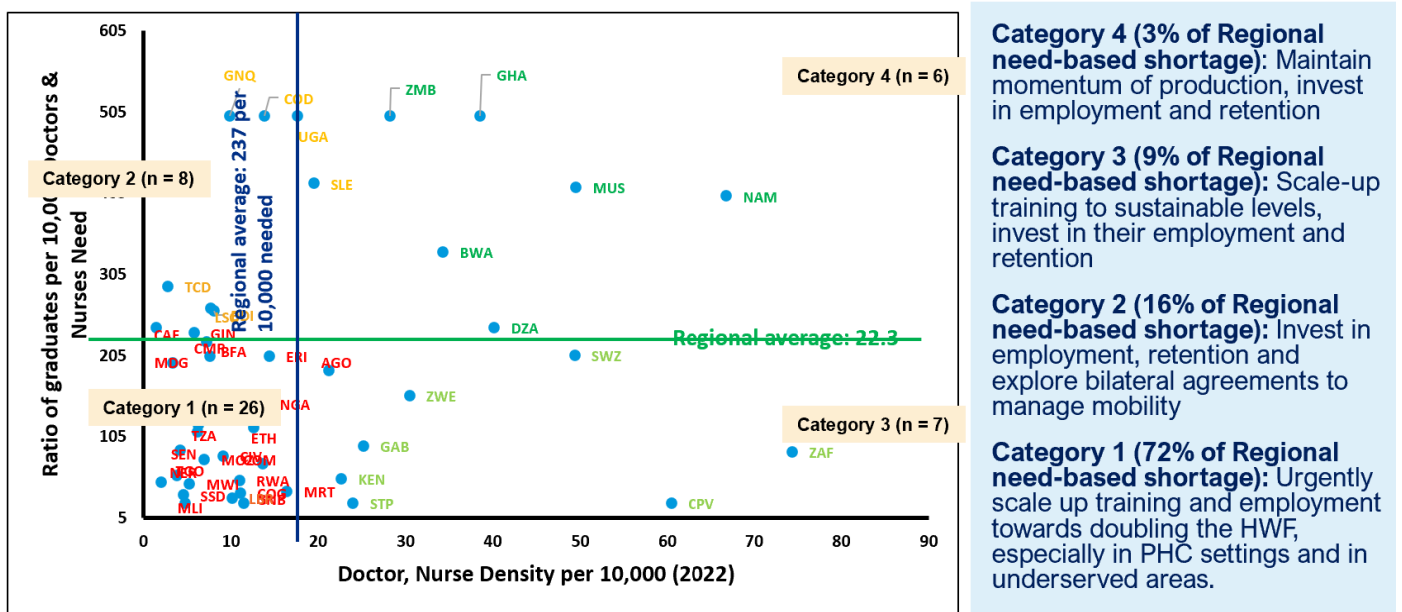

Category 4 (3% of Regional need-based shortage): Maintain momentum of production, invest in employment and retention

Category 3 (9% of Regional need-based shortage): Scale-up training to sustainable levels, invest in their employment and retention

Category 2 (16% of Regional need-based shortage): Invest in employment, retention and explore bilateral agreements to manage mobility

Category 1 (72% of Regional need-based shortage): Urgently scale up training and employment towards doubling the HWF, especially in PHC settings and in underserved areas.

Figure 3: Categories of countries based on their capacity to meet their HWF needs. *(Source: WHO)*

Discussion of Key Findings

The paradoxical surplus of health workers, characterised by a 27% unemployment rate, complicates the crisis further, emphasizing the need for not just training but effective employment and equitable distribution strategies.

Financial projections suggest that US$120 billion is needed over the next eight years to address this situation, with current funding anticipated to grow from US$20.85 billion in 2022 to US$31.81 billion by 2030.

Strengths and Limitations:

This analysis is the first of its kind to use nuanced, country-specific data to assess health workforce requirements across the region. It integrates a broad range of health interventions and expert opinions to provide a detailed view of HWF needs.

Limitations include reliance on modelled data and expert opinions, which introduces subjectivity and potential inaccuracies in workload and productivity measures.

Conclusion and Policy Options

- To mitigate the anticipated shortage and enhance health workforce capacity, countries need to more than double their current HWF stock, requiring significant investment, estimated at nearly 2% of GDP, focusing on both training and employment of health workers.

- Policy options include accelerating HWF training, particularly at the primary care level, developing integrated national HWF investment plans, optimizing skill mix, and transforming health profession education to be competency-based.

- Employment strategies should emphasize efficiency and equity, such as engaging in multisectoral policy dialogue, establishing wage harmonization, and strengthening health workforce analytics to support evidence-based decision-making.

References

1. WHO, Need-based health workforce requirements to address Africa's disease burden and demographic evolution: implications for investing in the education and employment of health workers, 2022 – 2030, a technical paper, 2024. https://iris.who.int/handle/10665/376718

Sources

The Integrated African Health Observatory supported the production of the factsheets.

Photography:

Left photo: An obstetrician-gynecologist during a weekly referral clinic at Wau

Teaching Hospital, Location: Wau Teaching Hospital, South Sudan, © WHO

Right photo: Portraits of a nurse, location: Plateau State Specialist Hospital in Jos, Nigeria. © WHO

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Contact us at: iAHO@who.int

Connect with us on LinkedIn: https://www.linkedin.com/company/iaho/

Fact sheet produced by:

Wai Phyo Thant, Solyana Kidane, Lydia Nobert, Sunny C Okoroafor, San Boris Bediakon, Serge Bataliack, Maritza Titus, Adam Ahmat, James Avoka Asamani, Erbeto Tesfaye, Kasonde Mwinga.