Increasing capacity and retention of the global health workforce

AMSA 2026 Medical Education Conference

Professor Jim Campbell

LinkedIn: bit.ly/4iJxD6i Google Scholar: bit.ly/44c1TAF

Lagos, Nigeria.
26-29 March 2026

COI | Acknowledgements

Conflict of interest:

None declared

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WHO Regional Offices – former colleagues, including Dr James Asamani and Dr Champion Nyoni

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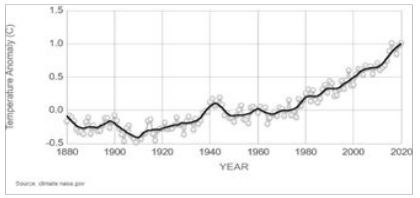
Contemporary demands: health systems

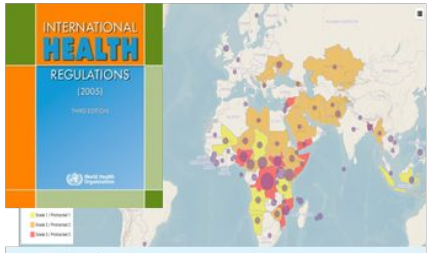
SDGs

Globalization

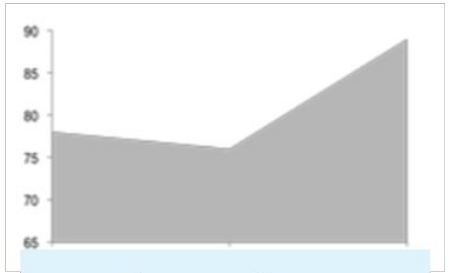
Conflict and war



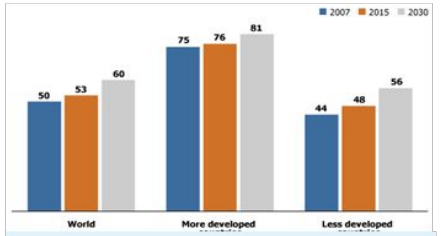
Climate change



Infectious disease outbreaks



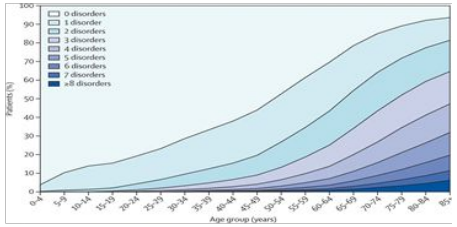
Innovation



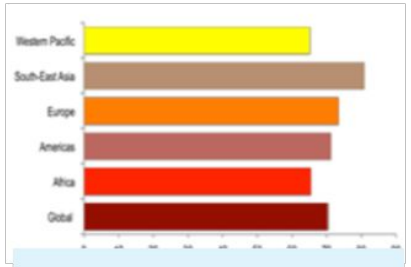
Urbanization

Refugees, IDPs and Migration

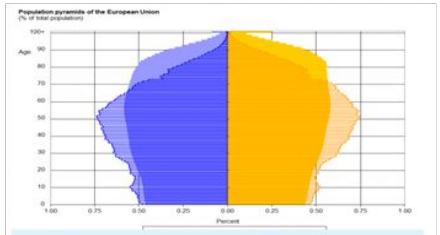
Antimicrobial Resistance



Multi-morbidity including NCDs

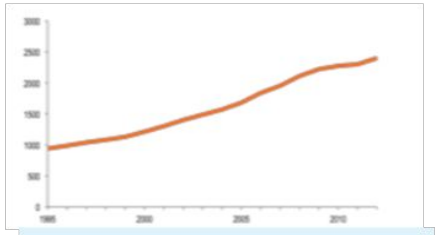


Civic voice

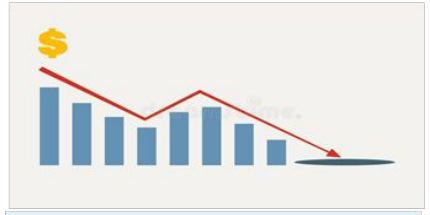


Aging populations and youth

Gender & inequality



Rising costs



Economic recessions

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Contemporary demands: “global health”

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HOUSE OF GOVERNANCE AND PUBLIC POLICY

Global health reform topics continue to receive notable traction

Karolinska Institutet

BBC

US officially leaves World Health Organization

BBC

The Guardian

News Opinion Sport Culture Lifestyle

World Europe US news Americas Asia Australia Middle East Africa Inequality Global development

Global development

Rising anger over ‘lop-sided’ and ‘immoral’ US health funding pacts wi African countries

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By Jenny Lei Ravelo // February

The U.S. will wind down health aid t pushes for sovereignty. Plus, how th Organization.

Funding Democracy, Human Rights

World Health Organization (WHO)

Partnership for International Politics and Diplomacy for Health

HOUSE OF GOVERNANCE AND PUBLIC POLICY

World Health Organization

Provisional agenda item 29.1

22 December 2025

Reform of the global health architectur and the UN80 Initiative

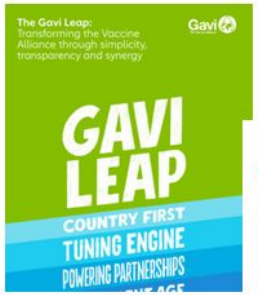
Report by the Director-General

Bold ideas for a reformed global health system

Partnership for International Politics and Diplomacy for Health

Fragmented reform for a fragmented system?

Karolinska Institutet



HISP

KNOWLEDGE HUB TO THE EUROPEAN COMMISSION ON HEALTH, INEQUALITIES & SOCIAL PROTECTION

Final report

EU AND LIKE-MINDED DONORS’ REFLECTION PROCESS ON REFORM OF THE GLOBAL HEALTH ARCHITECTURE:

Reform ideas and options

Contemporary evidence: global health workforce

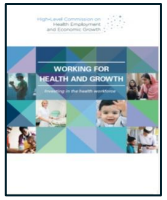
Third Global Forum on Human Resources for Health, Recife, Brazil

USAID / GHWA discussion on global health workforce solutions

2013

WHA 69.19
GSHRH

2016

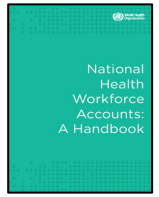


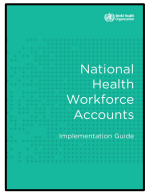
WHA 70.6
Working for Health

2017

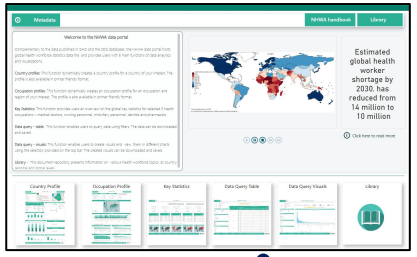
Fourth Global Forum on Human Resources for Health, Dublin, Ireland

NHWA launched





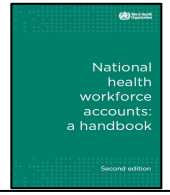
NHWA data portal



2020

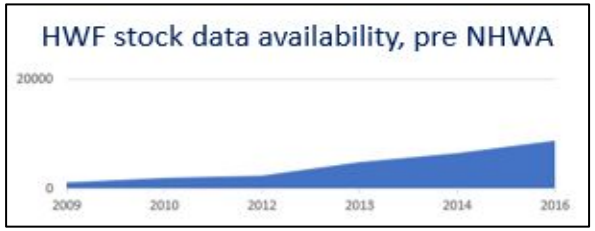
NHWA focal points appointed in **206 countries territories and areas** (including 98% of WHO Member States) as of December 205.

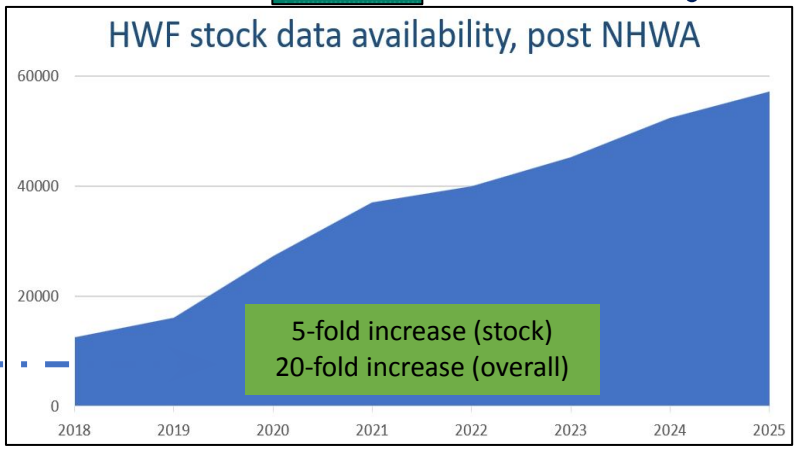
2023



NHWA version 2 released

2025





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Global health workers: by country / year

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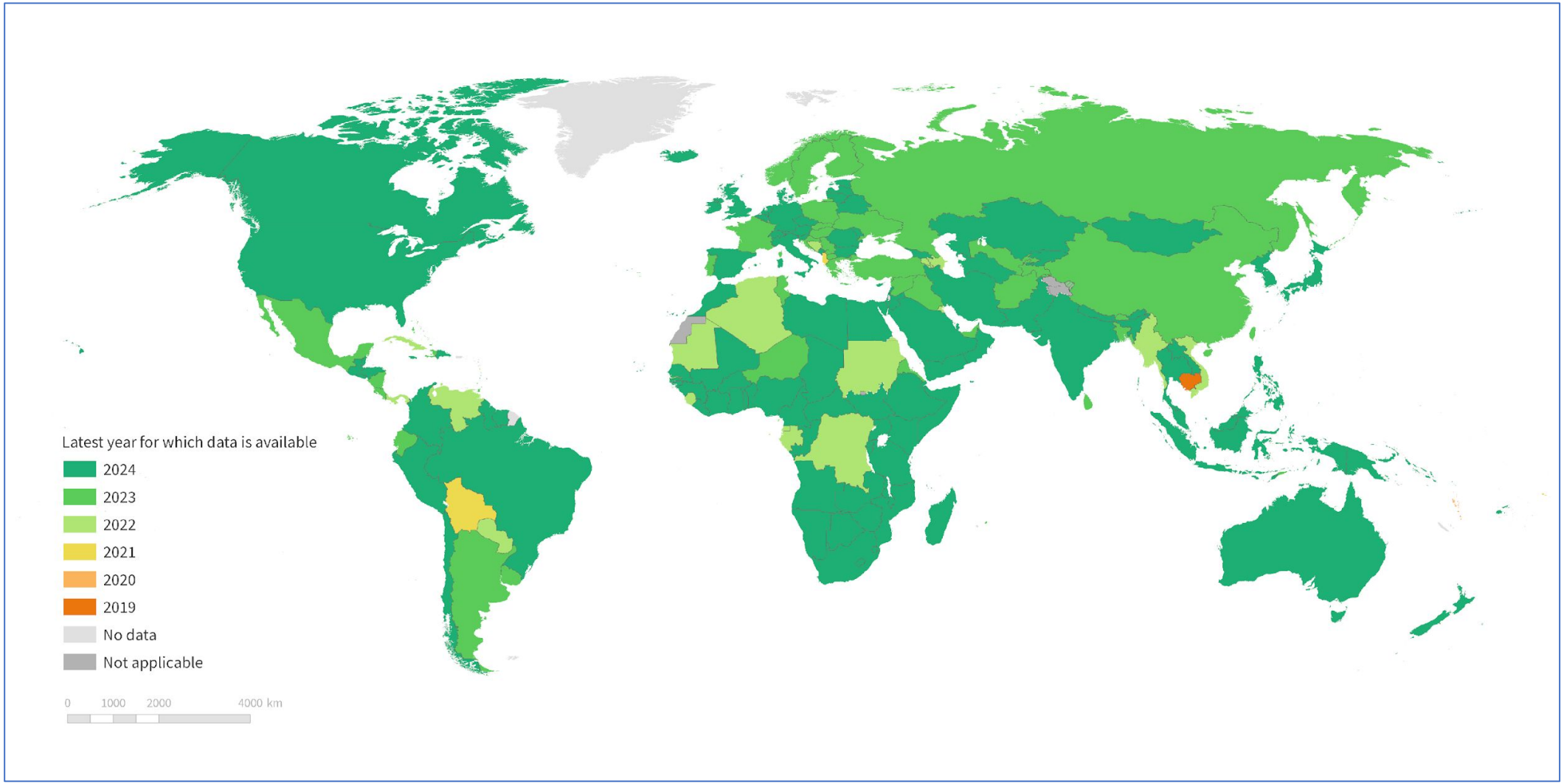

Note: The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

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Global health workers: by WHO region / occupation

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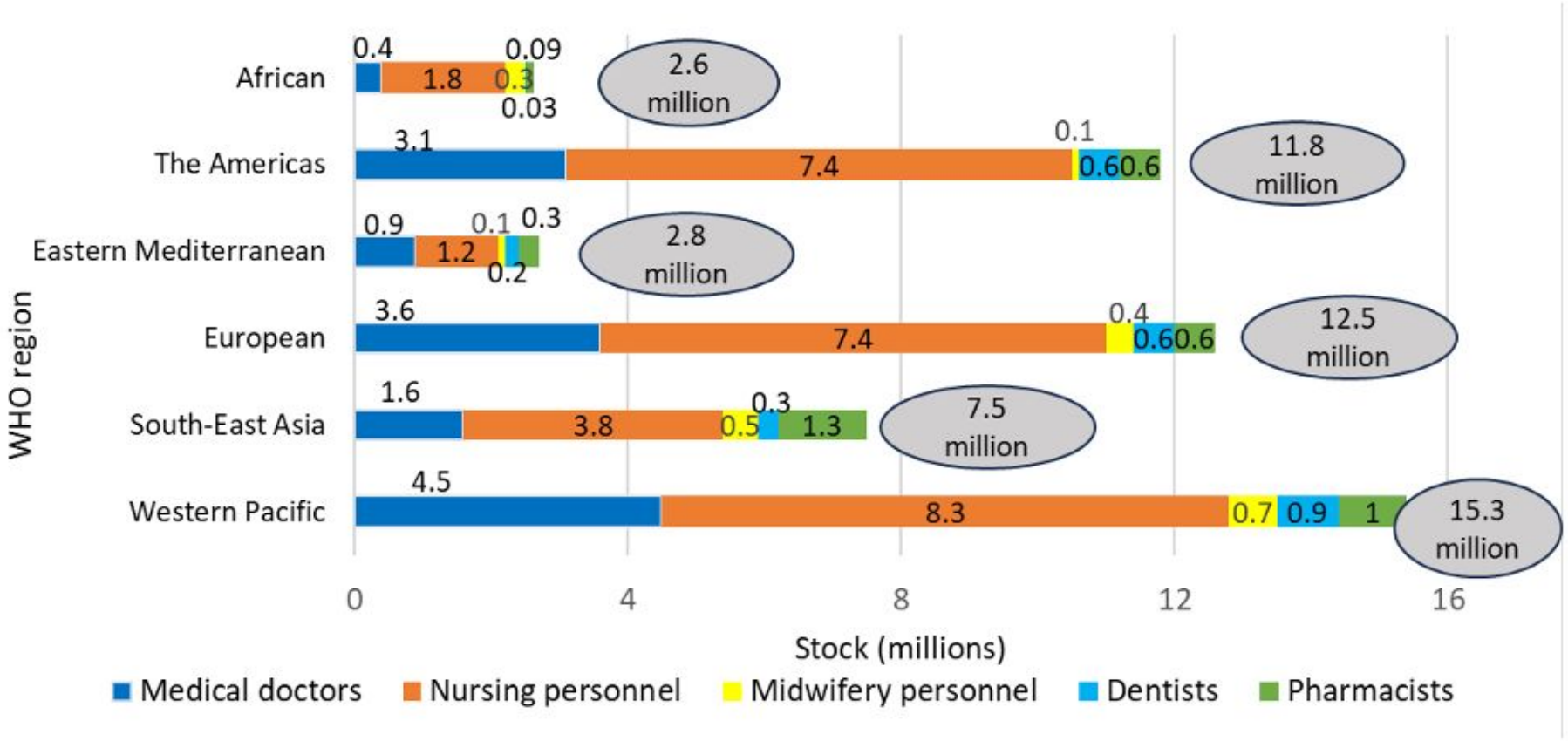

Source: WHO, national health workforce accounts, 2024 (note: stock totals are rounded).

- **"Big 5"** increases to **52.5 million**
- MDs increase to **14.1 million**
- MDs share = **27%** (range **15% - 32%**)

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Global health workers: progress over time (2013-2023)

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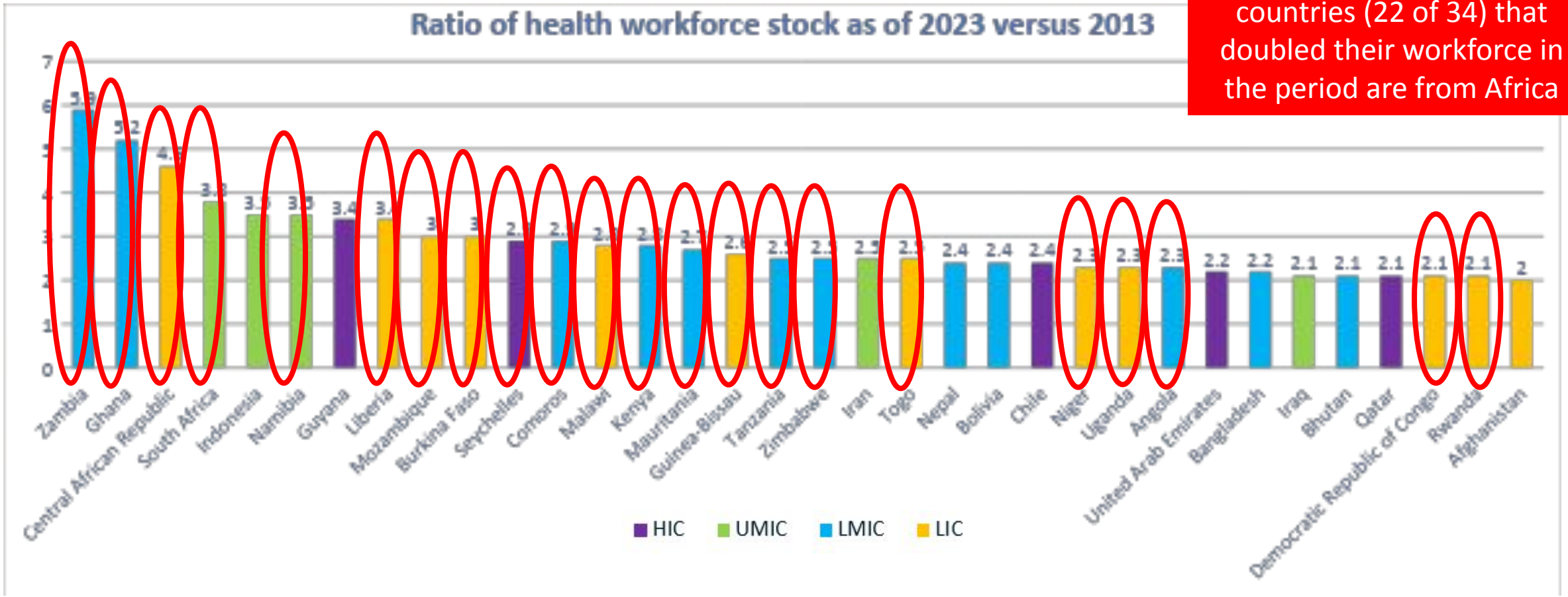
Almost two-thirds of countries (22 of 34) that doubled their workforce in the period are from Africa



Source: WHO National Health Workforce Accounts data portal, 2024 (https://apps.who.int/nhwaportal/).

Note: For this analysis, "workforce" refers to medical doctors, nursing and midwifery personnel, dentists and pharmacists. Comparison was done for stock data for these occupations using latest available data as of 2023 vis-à-vis as of 2013. In addition to actual expansion of workforce stock, this may also reflect improvement in data reporting (eg – incorporation of private sector data).

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Global health workers: medical & nursing education

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	LICs[2a]	LMICs[2a]	UMICs[2a]	HICs[2a]	Global	Africa
Doctor graduates per year[1b]	**19K** (n=18)	**150K** (n=33)	**233K** (n=32)	**153K** (n=48)	**556K** (n=132)	**39K** (n=42)
Nurse graduates per year[1b]	**90K** (n=22)	**536K** (n=36)	**256K** (n=40)	**710K** (n=57)	**1.6 million** (n=157)	**172K** (n=44)
Doctor graduates as % of active workforce[1]	**15.1%** (n=14)	**5.7%** (n=30)	**5.3%** (n=30)	**3.1%** (n=48)	**4.4%** (n=123)	**5.4%** (n=35)
Nurse graduates as % of active workforce[1]	**15.7%** (n=19)	**7.2%** (n=31)	**5.5%** (n=39)	**5.2%** (n=56)	**5.9%** (n=147)	**8.7%** (n=38)
Distribution of population (2025 estimates)[3]	**23%** (n=25)	**30%** (n=49)	**22%** (n=53)	**21%** (n=63)		**28%** (n=54)

Sources: (1) WHO National Health Workforce Accounts, 2025 (https://apps.who.int/nhwaportal/). (2) World Bank income classification as of 1 July 2025 for FY 2026 (https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups). (3) United Nations, Department of Economic and Social Affairs, Population Division. World Population Prospects 2024 (https://population.un.org/wpp/).

Notes: (a) Four WHO Member States – Cook Islands, Ethiopia, Niue, Venezuela – have not been assigned an income group classification. (b) For this analysis, latest available data reported by countries for medical and nursing graduates were considered. Given the differential rates of reporting data on health worker stock and graduates, comparison of their respective distributions by income group should be interpreted with caution. (c) WHO recommends that countries should achieve a graduates-to-stock ratio of about 8-12% to produce approximately one new graduate for every 10 health workers, particularly where HWF scale-up is required to address current and future shortages.

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Global health workers: Physicians by 3rd-4th-5th digit codes

NHWA modules	NHWA indicator	Medical doctors	Generalist medical practitioners	Specialist medical practitioners
Module 1 – stock and flow	Stock	194 (100%)	159 (82%)	157 (81%)
	Subnational distribution	77 (40%)	46 (24%)	41 (21%)
	Age distribution	135 (70%)	93 (48%)	72 (37%)
	Distribution by sex	156 (80%)	102 (53%)	85 (44%)
	Distribution by place of training	104 (54%)	48 (25%)	38 (20%)
	Distribution by place of birth	104 (54%)	57 (29%)	49 (25%)
Module 2 – education and training	Training places (capacity)	-	52 (27%)	31 (16%)
	Applications	-	47 (24%)	23 (12%)
	Enrollments	-	63 (32%)	31 (16%)
	Graduates	-	132 (68%)	56 (29%)

Data may exist in national registers / data sets, but not shared in annual administrative reporting to WHO

Compounded by "5th digit" classification gaps

Source: WHO National Health Workforce Accounts, 2025 (https://apps.who.int/nhwaportal/).

Higher tercile *Middle tercile* *Lower tercile*

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Global health workers: Country dashboards

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Status of health workforce data availability on NHWA as of 16 December	MODULE 1								MODULE 2				MODULE 3			
Country	Stock data	Subnational	Age group	Sex	Facility ownership	Facility type	Place of birth	Place of training	Training places	Applications	Enrollments	Graduates	Exp. on compensation	Entry level wages	Exp. on education	Tuition fees
Algeria	2022	NR	2018	2018	2017	NR	2018	2018	NR	NR	NR	2022	NR	NR	NR	NR
Angola	2024	2024	NR	NR	2024	NR	2024	NR	2024	NR	NR	2022	2024	NR	2024	NR
Benin	2024	NR	2024	2024	2024	2021	2024	2024	2024	2022	2023	2023	NR	2024	NR	NR
Botswana	2024	NR	2024	2024	2024	NR	2024	2023	2023	2024	2024	2024	2024	NR	2024	NR
Burkina Faso	2024	2022	2023	2023	2024	2024	NR	NR	2023	2023	2024	2024	NR	NR	NR	NR
Burundi	2024	2021	2024	2019	2019	2019	NR	NR	2024	NR	2015	2022	NR	NR	NR	NR
Cabo Verde	2023	2023	2024	2024	2023	2022	2024	2024	NR	NR	NR	NR	NR	2024	NR	NR
Cameroon	2024	NR	2022	2022	NR	NR	2022	2022	2022	2022	2022	2022	2022	NR	2022	NR
Central African Repub	2024	NR	2024	NR	2024	NR	NR	NR	2024	2023	2024	2023	NR	NR	2024	2024
Chad	2024	2024	2024	2024	2024	2024	2021	2021	2024	2024	2024	2024	2024	NR	2024	NR
Comoros	2022	2020	2013	NR	2020	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Congo	2024	NR	2024	2024	NR	NR	NR	NR	2022	NR	NR	2022	NR	NR	NR	NR
Côte d'Ivoire	2024	2024	2024	2024	2024	2024	NR	NR	2024	NR	NR	2022	NR	NR	NR	NR
Democratic Republic c	2022	NR	NR	NR	NR	NR	NR	NR	NR	NR	2015	2022	NR	NR	NR	NR
Djibouti	2022	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Egypt	2021	NR	NR	2017	2021	NR	NR	NR	NR	NR	NR	2012	NR	NR	NR	NR
Equatorial Guinea	2022	2018	NR	NR	NR	NR	NR	NR	NR	NR	NR	2022	NR	NR	NR	NR
Eritrea	2023	NR	2022	2022	2022	NR	2022	NR	NR	NR	NR	2022	NR	NR	NR	NR
Eswatini	2023	NR	2024	2024	2024	NR	2023	NR	2024	2024	NR	NR	2024	NR	2024	2024
Ethiopia	2024	2024	NR	2023	2023	NR	2023	NR	2024	NR	2015	2024	NR	NR	NR	NR
Gabon	2022	NR	2022	2022	NR	NR	2020	2020	NR	NR	NR	2022	NR	NR	NR	NR
Gambia	2023	NR	NR	2023	NR	NR	NR	NR	NR	2019	2019	2022	NR	NR	NR	NR
Ghana	2024	NR	2024	2024	2020	NR	2024	2024	NR	NR	NR	2022	2024	NR	NR	NR
Guinea	2024	2024	2024	2024	2023	NR	2024	2024	2023	2023	NR	NR	2023	NR	2023	NR
Guinea-Bissau	2024	2024	2024	2024	2024	NR	NR	NR	NR	NR	NR	NR	2023	NR	NR	NR
Kenya	2024	2023	2024	2024	2024	2024	NR	NR	2024	2024	2024	2022	NR	2022	2023	NR
Lesotho	2024	NR	2024	2024	2024	NR	2024	2024	NR	NR	NR	2022	NR	NR	2024	NR
Liberia	2022	NR	2013	NR	2024	NR	NR	NR	NR	NR	NR	2022	NR	NR	NR	NR
Libya	2017	NR	NR	NR	NR	NR	2017	NR	NR	NR	2016	2017	NR	NR	NR	NR
Madagascar	2024	NR	2024	2024	2024	NR	NR	2024	2024	2024	2024	2024	2024	NR	NR	NR
Malawi	2024	NR	2024	2022	2022	2022	2003	2003	NR	NR	2020	2022	NR	NR	NR	NR
Mali	2024	2024	2024	2024	2022	NR	2009	NR	2024	2024	2024	NR	NR	NR	NR	NR
Mauritania	2022	NR	2013	NR	2018	NR	NR	NR	2018	NR	NR	NR	NR	NR	NR	NR
Mauritius	2023	NR	2011	2011	2022	NR	NR	NR	NR	NR	NR	2022	NR	NR	NR	NR
Morocco	2023	2021	2014	2024	2024	NR	NR	NR	NR	NR	NR	2012	NR	NR	NR	NR
Mozambique	2024	2021	2024	2024	2024	2021	2024	2024	NR	2018	NR	2022	2024	2024	2024	NR
Namibia	2024	NR	NR	NR	2024	NR	2017	2017	2024	2023	2015	2022	NR	NR	NR	NR
Niger	2023	NR	NR	2016	2022	NR	NR	NR	NR	NR	NR	2022	NR	NR	NR	NR
Nigeria	2024	2024	2024	2024	2024	NR	2016	2024	2018	NR	2024	2024	NR	NR	NR	NR
Rwanda	2024	NR	2017	2024	2018	NR	NR	NR	NR	NR	2018	2022	NR	NR	NR	NR
Sao Tome and Princip	2022	NR	NR	NR	NR	NR	NR	2019	NR	NR	NR	NR	NR	NR	NR	NR
Senegal	2024	2023	2024	2024	2024	2023	2023	2021	NR	2020	2021	2022	NR	NR	NR	2019
Seychelles	2024	NR	2023	2023	2024	2018	2023	2024	NR	NR	2023	2023	NR	NR	NR	2024
Sierra Leone	2022	NR	2020	2020	NR	NR	NR	NR	2019	NR	2019	2022	NR	NR	NR	NR
Somalia	2024	NR	NR	2014	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
South Africa	2024	NR	2024	2024	2024	2023	2024	2014	NR	NR	NR	2022	NR	NR	NR	NR
South Sudan	2024	NR	NR	2024	NR	NR	2024	NR	2024	NR	NR	NR	NR	NR	NR	NR
Sudan	2017	NR	NR	NR	NR	NR	2017	2017	NR	NR	NR	NR	NR	NR	NR	NR

- **Module 1 (stock and flow)**

stock (96%), sex (63%), facility ownership (61%), age group (57%)

- **Module 2 (education)**

training places (41%), applications (30%), enrollments (26%), graduates (70%)

- **Module 3 (finance and expenditures)**

total exp. on compensation (20%), average wages (7%), total exp. on education (20%), average tuition fees (6%)

*Medical schools can provide data for **Module 2** and for some indicators in **Module 3***

Source: NHWA data availability scorecard – Dec'25

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Global health workers: Health professions education

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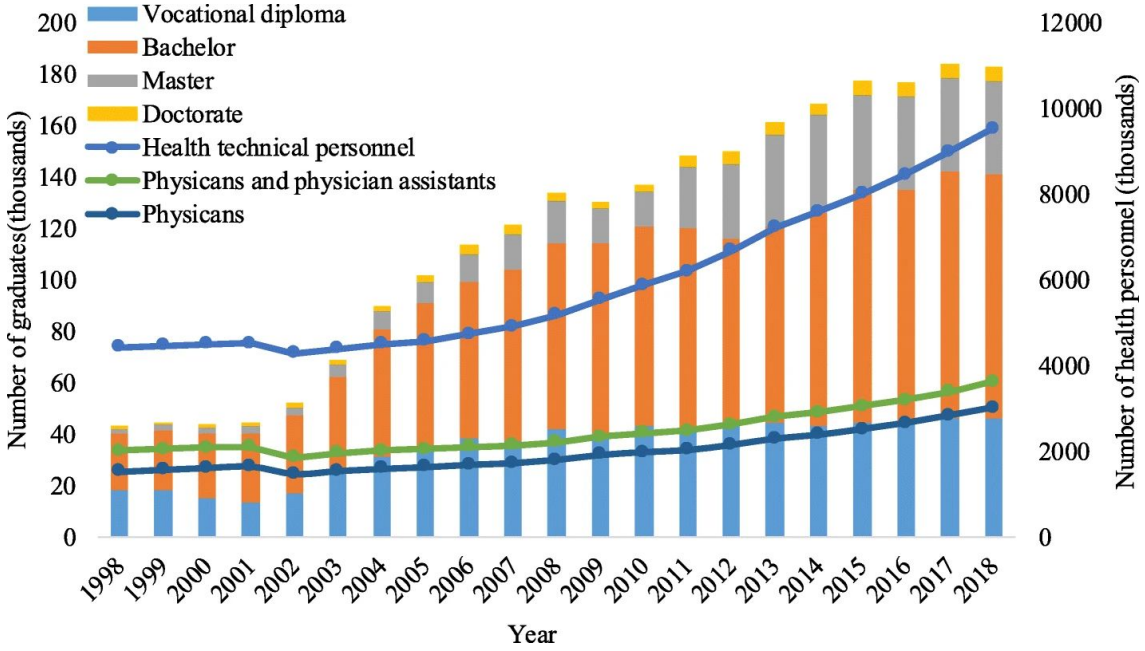
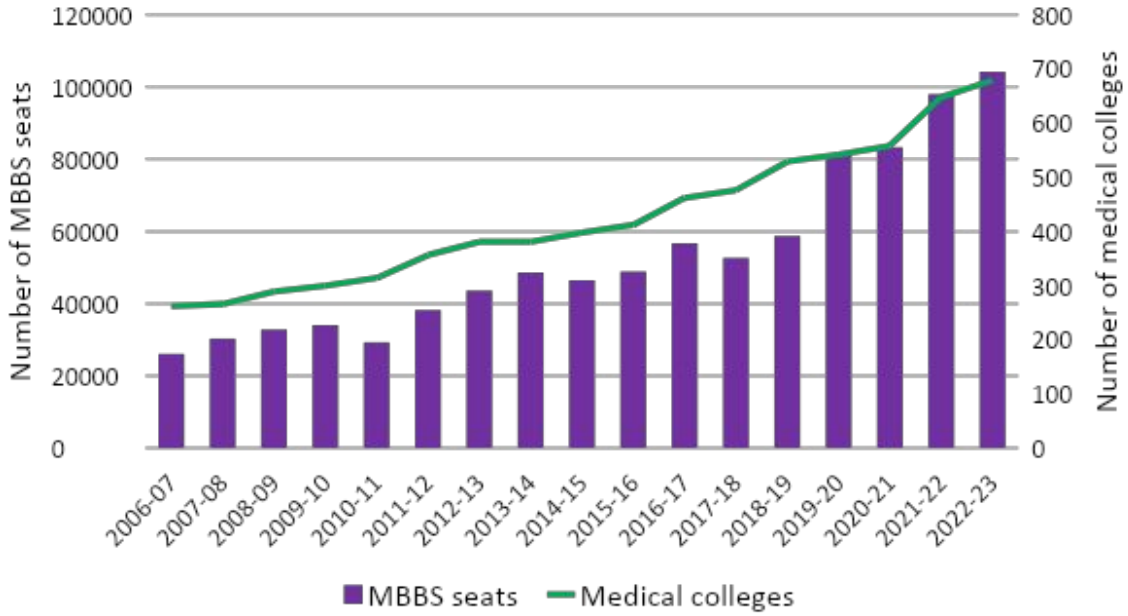
China



Between 1998-2018, graduates in health professions increased from ≈40k to ≈180k (350% ↑ in 20 years)

Source: Wang W. Medical education in china: progress in the past 70 years and a vision for the future. BMC Med Educ. 2021 Aug 28;21(1):453. doi: 10.1186/s12909-021-02875-6

India



Between 2006-2022, MBBS training capacity increased from ≈25k to ≈104k (300% ↑ in 16 years)

Source: Central Bureau of Health Intelligence. National Health Profile 2023. New Delhi: Ministry of Health and Family Welfare; 2024

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Health professions education: Africa rising?

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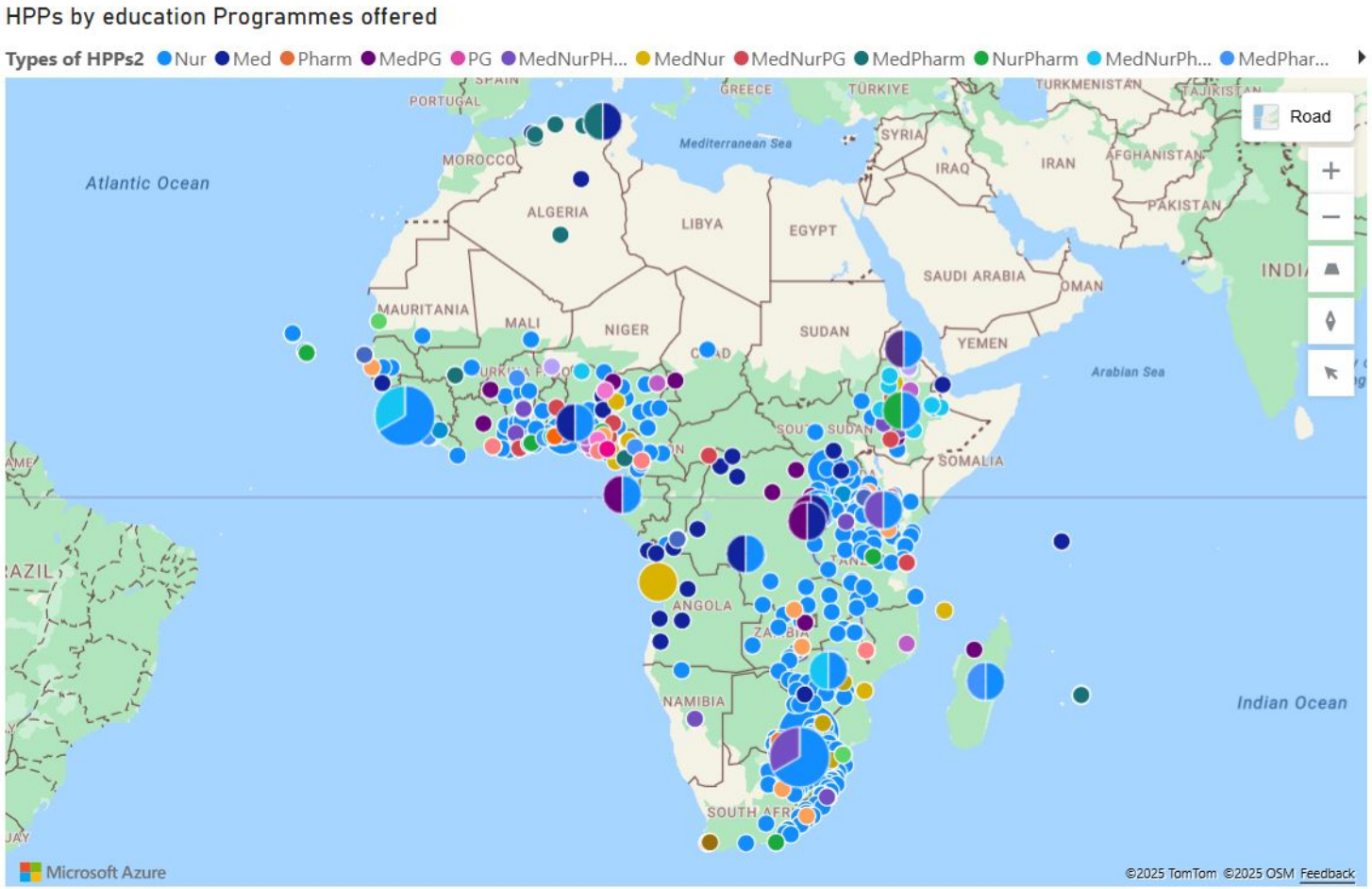

- Ongoing collaboration **WHO** / **Stellenbosch University (**Dr. Aaron Yarmoshuk)
- Establishment of a prototype registry with two databases:
  - **Database 1:** health education capacity and outputs of the five key health professional programmes **(medicine, nursing, midwifery, dentistry and pharmacy**) and general information about the programmes
  - **Database 2:** database of institutions in Africa offering health professional programmes.
- **Over 1000** health workforce education and training institutions identified in **48** countries - **WHO-AFR**, plus Somalia.
- Obtaining information for other 6 African countries in **WHO-EMR**.

https://www.su.ac.za/en/faculties/medicine/departments/nursing-midwifery/grohhp

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Medical education: Africa rising?

	2010[1] (n=40 countries)	2018[2] (n=43 countries)	2023[3] (n=53 countries)	
Public medical schools	125	264	269	**215 %**
Private medical schools	44	146	162	**368 %**
Total medical schools	**169**	**410**	**444**	**263 %**
Total medical graduates	-	20,470	-	**??**

Sources: (1) Chen et al. A survey of Sub-Saharan African medical schools. Hum Resour Health. 2012;10:4. doi: 10.1186/1478-4491-10-4.
(2) Okoroafor et al. An overview of health workforce education and accreditation in Africa: implications for scaling-up capacity and quality. Hum Resour Health. 2022;20(1):37. doi: 10.1186/s12960-022-00735-y.
(3) Rosenberg et al. Medical schools in Africa: seeing momentum. BMJ Glob Health. 2024;9(2):e014468. doi: 10.1136/bmjgh-2023-014468.

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Global health workers: migration to OECD countries

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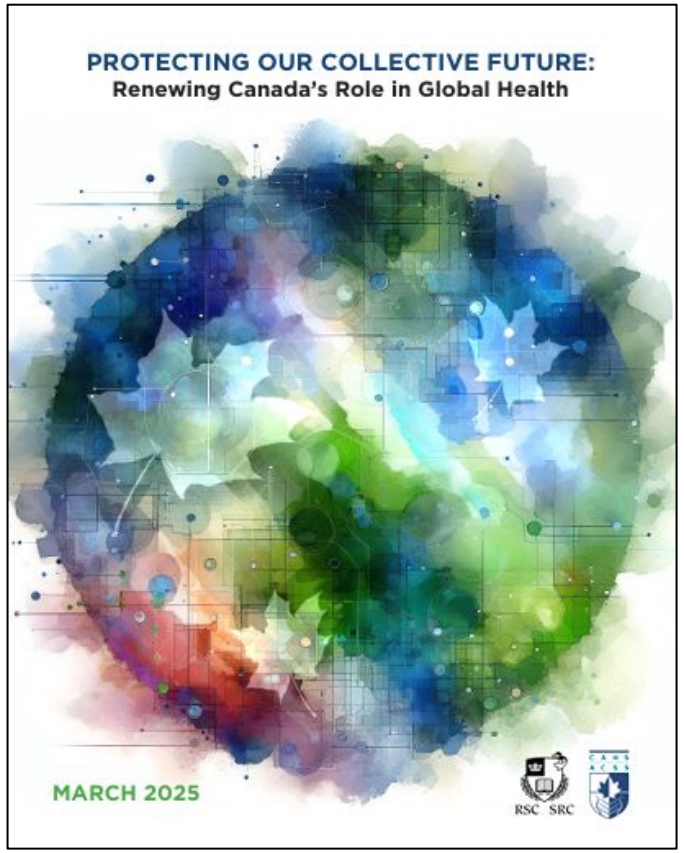
Doctors	2020/21	Growth since 2000/01	Nurses	2020/21	Growth since 2000/01
India	98 857	76%	Philippines	277 266	147%
Germany	31 024	107%	India	122 400	435%
China	30 342	60%	Poland	64 268	232%
Pakistan	29 689	182%	Nigeria	54 480	295%
Romania	25 499	272%	Germany	49 584	60%
United Kingdom	24 548	53%	United Kingdom	49 492	10%
Iran, Islamic Republic of	19 313	100%	Romania	46 882	487%
Russian Federation	18 826	268%	China	42 440	179%
Canada	17 587	76%	Jamaica	41 098	32%
Nigeria	17 060	264%	Mexico	39 244	214%
Poland	16 275	122%	Russian Federation	36 706	279%
Philippines	14 922	-6%	Haiti	35 834	175%
Syrian Arab Republic	14 864	128%	Korea	25 686	151%
Egypt	14 008	82%	Ukraine	23 884	450%
Ukraine	12 979	233%	Canada	23 630	-4%
South Africa	11 953	61%	Kazakhstan	22 070	236%
Italy	11 860	168%	Viet Nam	21 517	224%
Korea	11 790	37%	Ghana	21 377	292%
Algeria	11 423	5%	Bosnia and Herzegovina	20 350	221%
Malaysia	10 623	127%	Kenya	20 277	565%
United States	10 548	192%	Zimbabwe	20 194	438%
Greece	9 964	245%	France	18 746	138%
Viet Nam	9 922	34%	Cuba	18 730	331%
Cuba	9 821	69%	Cameroon	17 186	772%
Iraq	9 767	174%	Portugal	15 418	568%

OECD foreign-born Physicians and Nurses by Country

- In 2020/21, about 54,000 doctors and 133,000 nurses working in the OECD were born in Africa.
- Physicians: main countries of origin included **Nigeria** (17k), **Egypt** (14k), **South Africa** (12k), **Algeria** (11k).
- Nurses: main countries of origin were **Nigeria** (55k), **Ghana** (21k), **Kenya** (20k), **Zimbabwe** (20k) and **Cameroon** (17k).

Source: Lauren et al. International migration of health professionals to OECD countries. In: International Migration Outlook 2025. Paris: OECD; 2025:161-235. (https://doi.org/10.1787/ae26c893-en)

Health worker migration: Education costs averted (Canada)



- A growing reliance on internationally educated health workers….
- An explicit pro-health worker immigration policy fuelled by federal funding and immigration fast-tracking that risks breaching the WHO Code of Conduct for Ethical Recruitment of Health Workers.
- …Canada realizes **more than CDN$1 billion training subsidy annually** from not paying for the training of these workers.
- This is more than half of what Canada spends on development assistance for health each year.

Source: Royal Society of Canada, 2025. Available at: https://rsc-src.ca/en/protecting-our-collective-future-renewing-canadas-role-in-global-health

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Health worker migration: Education costs averted (Top 10)

US$ 170 billion "subsidy" from not paying the undergraduate education cost for 570k foreign trained/born medical doctors

Rank (stock)	Country	Approximate education cost averted for doctors (USD)
1	United States of America	64.7 B (48.5 – 80.9 B)
2	Saudi Arabia	20.4 B (15.3 – 25.5 B)
3	United Kingdom	19.9 B (14.9 – 24.8 B)
4	Germany	16.5 B (12.4 – 20.6 B)
5	Australia	10.2 B (7.7 – 12.8 B)
6	France	8.3 B (6.2 – 10.4 B)
7	Canada	8.2 B (6.1 – 10.2 B)
8	Argentina	7.7 B (5.8 – 9.6 B)
9	United Arab Emirates	6.7 B (5 – 8.3 B)
10	Switzerland	6.6 B (4.9 – 8.2 B)

Note: WHO estimates based on Evans et al. Average education cost averted was computed by multiplying the number of foreign born/trained health workers with the average estimated education cost plus credentialization cost of these health workers. Point estimate of 300,000 USD for doctors and 130,000 USD was used, based on Canada's values (rounded up). Sensitivity analysis was done (±25%), assuming that health workforce education costs would be of a similar order of magnitude in the other 9 HICs.

***Source**: Evans T et al. Protecting our Collective Future: Renewing Canada's Role in Global Health. Royal Society of Canada and Canadian Academy of Health Sciences. 2025 (https://rsc-src.ca/sites/default/files/Global%20Health_EN.pdf,*

Health worker migration: Education costs averted (UK)

- The NHS is **structurally dependent on health workers trained overseas**, including from countries that are themselves facing critical workforce shortages.
- The **NHS has saved at least £14 billion in training costs** by employing doctors, nurses and midwives trained overseas rather than funding their education in the UK.
- …**more than £1 billion in training costs averted in the last year alone**.
- Recommendation of **proportionate co-investment**: linking the benefits the UK gains from international recruitment to targeted investment in training, retention and health system strengthening in partner countries.

Source: APPG Global Health & Security
https://www.globalhealthpartnerships.org/wp-content/uploads/2026/03/APPG-Inquiry-Report_Updated.pdf

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Health worker migration: “We need a new compact”

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Dr Iziaq Adekunle Salako,
Minister of State for Health and Social Welfare, Nigeria

*“**We need a new compact**. A mutually beneficial approach to global health will be for source countries and destination countries to cooperate in a more profound and collaborative manner **such that rich countries are not just extracting workforce from poor countries**.*

*Calling for developed countries not just to think about extraction, but to think more about mutual contribution, such that **when Nigeria produces health professionals and the UK takes those health professionals, then the UK should be responsible** for replacement of not totally, but at least significantly.*

*A compact that looks at the world as one global community and that realizes that **when you extract from somewhere, you create a challenge, and you must contribute to solving it”.***

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From intelligence to policy

Professor Akin Abayomi: *"Everything you do must translate into policy"*

- Contemporary demands on health systems & global health.
- A new era of a "Polycentric Health Architecture".
- Africa -> rapidly growing education and labour markets (with private actors, equity/capital).

1. Government stewardship -> optimisation of labour markets
2. Anchor institutions (Hospitals, Universities, Associations, Employers)-> enhanced roles.
3. Professional / private networks -> Partnerships for Public Purpose.
4. Medical students & early career -> vested interests in the new compact.
5. AMSA / WFME -> will you step forwards?

This is Lagos

Thank You

LinkedIn: bit.ly/4iJxD6i

Google Scholar: bit.ly/44c1TAF