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Mini Opinion

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Can Biomedical Science & Research Widen the Global Health Access for All Nations?

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Introduction

Universal Health Coverage (UHC) means that all people have access to the full range of quality health services they need, when and where they need them, without financial hardship. It covers the full continuum of essential health services, from health promotion to prevention, treatment, rehabilitation and palliative care across the life course. The global health access disparity remains staggering: an estimated 4.6 billion people-more than half of the world's population-lack full access to essential health services. While data from the WHO Health Inequality Data Repository shows that some rich-poor healthcare gaps have narrowed over the last few decades, progress toward Universal Health Coverage (UHC) has severely slowed. This inequality is driven more strongly by national income than geographic location. A comparison of key health indicators illustrates the wide divide between the world's highest-performing and lowest-performing healthcare systems.

The Dimensions of Global Health Disparities

The Universal Health Coverage (UHC) Index Stagnation

According to the joint WHO and World Bank 2025 UHC Global Monitoring Report, the global UHC service coverage index (scored from 0 to 100) crawled only from 68 to 71 between 2015 and 2023.

Medical Financial Ruin

Roughly 2.1 billion people face severe financial hardship due to out-of-pocket medical costs. Health expenditures push roughly 100 million people into extreme poverty every year.

The Urban-Rural Divide

Across all nations-regardless of their GDP-rural populations experience 20% to 50% higher mortality rates for preventable causes than urban peers, largely because travel times to emergency and specialist facilities are 3 to 5 times longer.

Domestic Wealth Gaps

Disparities are not just international; they are highly internal. Even in affluent regions, marginalized communities (such as the Roma population in Europe or low-income and minority counties in the United States) show drastically lower life expectancies and higher disease burdens than the national averages.

Research Gaps

Researchers in Biomedical field worldwide could not form an international forum and plan to narrow down the health disparities by developing medicines with low cost or at least with affordable costs for the developing nation in particulars. The issue is compounded by a global health financing crunch. Official development assistance for health dropped an estimated 30% to 40%, drastically impacting countries like Mozambique, Zambia, and Malawi, which rely heavily on external funding to counter malaria, TB, and HIV.

Low National Budgets for Research in Biomedical Field

Global biomedical and health research funding is heavily concentrated in high-income nations, with the United States leading

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individual agency funding and China and other nations driving massive overall R&D investments.

Major Nations and Biomedical/R&D Budgets

United States

The U.S. leads the world in dedicated biomedical research funding. The **National Institutes of Health (NIH)**-the primary federal agency for biomedical and public health research-operates an annual budget of roughly $45 billion to $48 billion (scaling past $610 billion equivalent in comparative scale or local figures across specific institutions). Overall U.S. R&D spending spans $781.8 billion (about 3.5% of GDP), heavily propelled by the private biotech and pharmaceutical sectors.

China

China ranks first in total R&D spending at $785.9 billion (approx. 27.4% of the global share or 2.7% of GDP). Government-backed laboratories and state-directed health initiatives heavily fund biotechnology, genetics, and clinical translational research, though specific non-aggregated public healthcare budgets scale alongside massive national science directives.

European Union (EU)

Through framework programs like Horizon Europe and predecessor initiatives like Horizon 2020, the EU allocated €7.9 billion to €8 billion specifically to human health and biomedical research over multi-year cycles. Original member states (EU-15) capture roughly 87% of this funding, compared to 3% for newer member states (EU-13). Total national R&D figures feature leaders like Germany ($132.2 billion) and France ($65.8 billion).

Japan & South Korea

Japan invests $186.0 billion in total R&D (3.5% of GDP) with strong institutional backing for medical sciences. South Korea invests $126.4 billion to $136.4 billion (over 5.3% of its GDP), heavily targeting high-tech bio-health and convergence industries.

United Kingdom

The UK spends $86.5 billion on total R&D (2.8% of GDP), with major biomedical investments channeled through agencies like UK Research and Innovation (UKRI) and the Medical Research Council (MRC).

India

India spends approximately $75.7 billion in total R&D (about 0.7% of GDP). Dedicated medical research is primarily led by the Indian Council of Medical Research (ICMR) alongside the Department of Biotechnology (DBT), operating on centralized public health allocations that represent a significantly smaller per-capita share compared to Western counterparts.

Global Funding Disparities by Region and Disease Focus

Geographic Concentration

Out of roughly $37 billion tracked globally in competitive research grants, high-income nations receive over 98%, with the Americas capturing the vast majority (driven heavily by the U.S.), while low-income nations and regions like Africa or South-East Asia receive a small fraction of direct grant volumes.

Focus by Region

Americas / Europe: Heavily prioritize non-communicable diseases (such as cancer, neuropsychiatric/Alzheimer's conditions, and cardiovascular disease), which account for over 68% of global grant funding.

Africa / South-East Asia / Eastern Mediterranean: 88% to 91% of research funding in these regions is directed toward communicable, maternal, prenatal, and nutritional conditions (such as HIV/AIDS, tuberculosis, malaria, and diarrheal diseases) due to urgent regional public health needs.

Conclusion

In conclusion it is recommended that scientists of all the nations in biomedical research form a union and decide on the priorities and the types of research they are focusing on. Various funding agencies also should join together and divide the various problems among themselves and provide the funding for particular disease-oriented research. More than all there should be a universal health coverage insurance scheme which can widen the global health access for all nations irrespective of advanced or developing nations.

Conflict of interest

None.

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None.