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Assessing Human Capital, Non-communicable Diseases, and Healthy Longevity in Low- and Middle-Income Countries

Healthy longevity dashboard and the case for India

Daphne C. Wu [a], Jeremy Veillard [b],
Victoria Haldane [c], Seemeen Saadat [d], Prabhat Jha [a]

[a] Centre for Global Health Research, Unity Health Toronto, University of Toronto, Canada
[b] Health, Nutrition, and Population, Latin America and Caribbean, World Bank
[c] Institute of Health Policy, Management and Evaluation, University of Toronto
[d] Health, Nutrition, and Population Global Practice, World Bank

INTRODUCTION

The global population is rapidly aging. By 2050, one in six people will be over the age of 65 (United Nations, Department of Economic and Social Affairs, Population Division 2022). An aging population comes with a complex set of risks to health, well-being, and productivity. Non-communicable diseases (NCDs) are one such risk that increasingly threatens the lives and livelihoods of older adults. Indeed, 74% of all deaths people annually are due to NCDs (WHO 2022a). Low- and middle-income countries (LMICs) bear a disproportionate and growing burden of NCD-related morbidity and mortality, with 77 percent of all NCD deaths occurring in LMICs (WHO 2022a). Yet, in many LMICs, healthy aging and NCDs are a nascent area of policy action.

Coordinated efforts are needed globally to emphasize the importance of healthy longevity on both health and well-being. The concept of healthy longevity describes a process of ageing that promotes human capital across the life course and where NCDs, serious disability, and deaths are avoided in middle age, thereby compressing morbidity into the older ages. The World Bank Healthy Longevity Initiative (HLI) sets an agenda that promotes human capital accumulation and preservation across the life course, while also considering the linkages between these, NCDs, healthy longevity, economic, and well-being outcomes (World Bank 2024). To realize such an agenda, strategic action, and focused investments, guided by local evidence, are required with progress monitored over time.

The HLI offers a common framework and harmonized benchmarking approach to measuring and monitoring healthy longevity, while also recognizing that differing data and information system contexts across countries will inform the mix of indicators and their presentation in performance dashboards (hereafter 'dashboards'). Dashboards bring together representations of indicators into a unified interface that uses data visualization tools to enable performance monitoring across selected performance dimensions. Here, we describe one such healthy longevity dashboard proposed for use by countries with moderate data infrastructure maturity.

METHODS

Selecting indicators

Rationale for selecting HLI indicators

The healthy longevity dashboard is an ongoing effort to develop and refine a suite of indicators that bring together relevant data to measure and monitor country progress towards healthy longevity. As part of these efforts, a common framework for healthy longevity and harmonized approach has been proposed under HLI (World Bank 2024, O'Keefe and Haldane 2024). Under this approach, indicators were selected that map to the overarching HLI conceptual framework and that can be distilled across three key actions and ten related domains to be prioritized when developing a healthy longevity dashboard (Table 18.1). This approach allows us to identify indicators that map to data infrastructure maturity in a given country, while ensuring comparable and consistent conceptual underpinnings. What indicators are used to carry out these actions and represent these domains is informed in part by country context as well as by the data infrastructure maturity of the country developing the dashboard. As such, indicators must be selected that not only correspond to different stages of the life course but that are also are actionable, pragmatic, and comprehensive and represent a breadth of structure, process, and outcomes measures.

Indicators of context

First, we selected contextual indicators. These indicators were selected to provide crucial information on basic social, demographic, and economic characteristics of a country that enables policymakers and other dashboard users to correctly interpret the setting from which other performance-related indicators are drawn.

TABLE 18.1 Key actions and related domains when developing a healthy longevity dashboard

Life course stage	Intensive human capital accumulation	Human capital accumulation, deployment, and depreciation	Declining human capital accumulation, accelerated depreciation and depletion
Key action	1. Promoting enabling factors for human capital accumulation	2. Ensuring adequate prevention and control of NCDs across the life course	3. Creating supportive conditions for healthy and productive ageing
Supporting domains	• Disease prevention • Education outcomes • Youth focus • Gender norms	• NCD risk factors and behaviors • NCD management • Reducing avoidable mortality	• Healthy population • Productive ageing • Well-being in old age

The indicators of context are as follows:

i. Gross domestic product (GDP) per capita and World Bank income category based on the 2021 World Bank country classification: low income, lower-middle income, upper-middle income, or high income;

ii. GINI index;

iii. Poverty gap at $3.65 a day (2017 PPP), defined as the mean shortfall in income or consumption from the poverty line of $3.65 a day, expressed as a percentage of the poverty line (World Bank 2022);

iv. Percentage of population aged 60 years and older;

v. Percentage of population of working age defined as ages 15 to 64;

vi. Labour force participation rate, defined as the proportion of the population ages 15 and older that is economically active;

vii. Ratio of female to male labor force participation rate;

viii. Mean years of schooling among population aged 25 years and over;

ix. Percentage of total deaths due to NCDs;

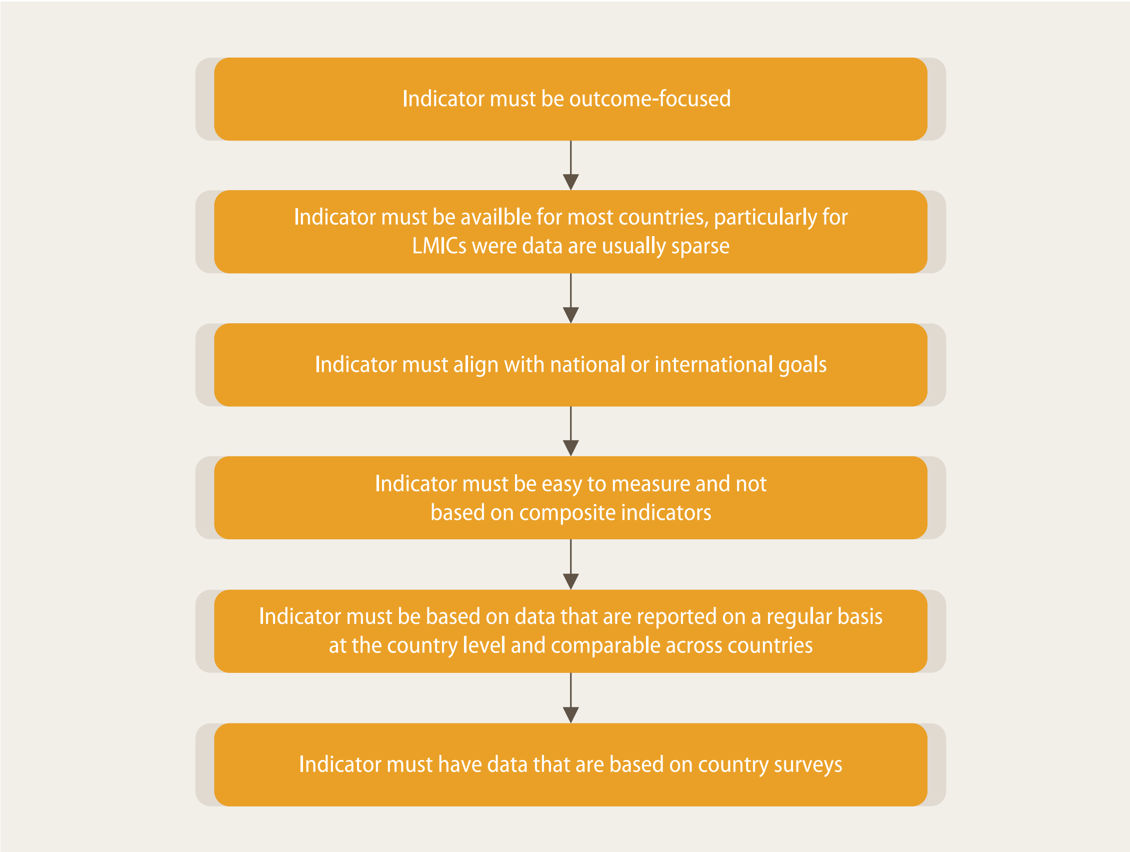
x. UHC coverage index, defined as the average coverage of essential services based on interventions in reproductive, maternal, newborn and child health, infectious diseases, NCDs and service capacity and access, among the general and the most disadvantaged population (WHO 2022b).

HLI indicators

We then used the conceptual framework to identify healthy longevity indicators that draw from available data that are contextually relevant, readily available and would inform policymakers and others on key elements for monitoring and progress. To identify such indicators, we conducted a review of data available from international institutions, including the World Health Organization (WHO) Global Health Observatory (WHO 2022c), World Bank World Development Indicators (World Bank 2022), Organization for Economic Co-operation and Development (OECD) Statistics (Organization for Economic Co-operation and Development (OECD) 2022), ILOSTAT (International Labour Organization (ILO) 2022), and UNESCO Institute for Statistics (UNESCO Institute for Statistics 2022). We only reviewed data from international institutions as this allows comparability of data across countries which is an important objective of the dashboard. We did not include data from the Institute for Health Metrics and Evaluation's Global Burden of Diseases, Injuries, and Risk Factors Study (GBD), as most estimates in the GBD are generated from complex models using inputs from country surveys, vital statistics, and other data sources, where available (Vos and others 2020). For LMICs where data collection and availability is sparse, the input sources used in the GBD model are ambiguous and the estimates generated are thus debatable. As such, we excluded data from the GBD.

From the global data review, we gathered a list of plausible indicators that can be classified into 10 broad domains pertaining to the accumulation, deployment, and depletion of human capital and healthy longevity, with a focus on NCDs. These domains are: (i) life expectancy, (ii) mortality at different life stages (under five years, school age (age

FIGURE 18.1 **Criteria and process of indicator selection**



5-14 years), youths and young adults (age 15-29 years), adults aged 30-69 years, and older ages (aged 70 years and above)), (iii) child health, (iv) adult immunizations, (v) risk factors, (vi) access to care for NCDs and NCD management, (vii) education, (viii) gender equality, (ix) labor force, and (x) social protection. We did not have a domain on morbidity as the only cross-country sources of morbidity data are the WHO and the GBD, and WHO estimates are drawn primarily from the GBD.

The list of plausible indicators was further streamlined using the following criteria:

a. The indicator must be outcome-focused,

b. The indicator must be available for most countries, particularly for LMICs where data are usually sparse,

c. The indicator must align with national or international goals,

d. The indicator must be easy to measure and not based on composite indicators,

e. The indicator must be based on data that are reported on a regular basis at the country level and comparable across countries, and

f. The indicator must have data that are based on country surveys and not generated chiefly from epidemiological or econometric models.

The steps used to select the indicators are presented in Figure 18.1.

The list of selected indicators along with the domains are presented in Table 18.2. Where sex and income disaggregated data are available, they were included. This list of indicators may, however, differ by country, depending on data availability for the country.

TABLE 18.2 Indicator domains and indicators in the HLI dashboard for setting with moderate data infrastructure, and data sources for the India HLI dashboard

Domains	Indicators
Life expectancy	• Life expectancy at birth • Life expectancy at age 60 • Healthy life expectancy at birth • Healthy life expectancy at age 60
Mortality at different life stages	• Under-five mortality rate • School age (age 5-14 years) mortality rate • Mortality rate among youths and young adults (age 15-29 years) • Adult (aged 30-69 years) mortality rate • Mortality rate at older ages (aged 70 years and above)
Child health	**Childhood vaccinations** • BCG immunization coverage among one-year olds • Diphtheria tetanus toxoid and pertussis (DTP3) immunization coverage among one-year-olds • Polio (Pol3) immunization among one-year-olds • Measles-containing-vaccine second-dose (MCV2) immunization coverage by the nationally recommended age **Healthy growth** • Stunting prevalence among children under 5 years • Wasting prevalence among children under 5 years • Underweight prevalence among children under 5 years
Adult immunizations	• Tetanus vaccination coverage for pregnant women • COVID-19 vaccination (two doses) coverage for all ages
Access to care for NCDs and NCD management	• Prevalence of treatment (taking medicine) for hypertension among population aged 30-79 with hypertension
NCD risk factors	**Tobacco use** • Tobacco use prevalence among population aged 15 years and over • Cigarette smoking prevalence among population aged 15 years and over • Tobacco use prevalence among youths aged 15-24 years • Tobacco cessation, represented by the ratio of former to current smokers aged 45-59 years **Harmful alcohol use** • 12-month prevalence of harmful alcohol use among population aged 15+ years **Obesity** • Obesity prevalence among population aged 20 years and over **Type 2 diabetes** • Prevalence of type 2 diabetes among population aged 20-79 **Hypertension** • Prevalence of hypertension among population aged 30-79 years **Mental health** • Prevalence of current depression among population aged 18 years and over
Education	• Learning-adjusted years of school at age 18
Gender equality	• Percentage of ever-partnered women aged 15-49 years who experienced physical and/or sexual violence by current or former partner in the previous 12 months • Percentage of women's (aged 15-64) work time (paid and unpaid) spent on unpaid work • Ratio of female to male labor force participation rate • OECD Social Institution and Gender Index (SIGI)*
Labour force	• Labour force participation rate among population aged 15 years and over
Social protection	• Population covered by at least one social protection cash benefit (excluding health)† • Public expenditure on social protection (excluding health), as % of GDP • Public expenditure on pension, as % of GDP

* The OECD Development Centre's Social Institutions and Gender Index (SIGI) is a cross-country measure of discrimination against women that takes into account country laws, social norms, and practices around women's rights and access to resources (including discrimination in the family, restricted physical integrity, restriction access to productive and financial resources, and restricted civil liberties for women) (OECD 2019). Although this index is not based on data reported periodically by countries, it serves an important information source on "Whether or not legal frameworks are in place to promote, enforce and monitor gender equality and women's empowerment" (SDG Indicators 5.1.1).

† Proportion of the total population receiving at least one contributory or non-contributory cash benefit, or actively contributing to at least one social security scheme.

Performance score

To assess the performance of a country relative to other countries with respect to an indicator, we normalized the data across countries to calculate the score based on two approaches: percentile rank approach and z-score approach. Details of the two approaches are described below. In both approaches, the study country is compared with other countries that fall under the same income strata as the study country, based on the 2021 World Bank country classification (World Bank 2021), and have a population of more than seven million (or 0.1 percent of the world population) in 2021, based on the United Nations' World Population Prospects 2022 (United Nations, Department of Economic and Social Affairs, Population Division 2022). A score of 100 percent indicates best performance, 50 percent indicates average performance, and 0 percent indicates worst performance relative to the other countries.

Percentile rank approach

In the percentile rank approach, the score for an indicator is represented by its percentile rank. The percentile rank is calculated using the standard formula:

$$\text{Percentile rank}=(M+(0.5^*R))/Y$$

where 'M' is the number of values below the value for the study country, 'R' is the number of values equals to the value for the study country, and 'Y' is the total number of values.

For indicators where a higher value indicates better performance, such as life expectancy and employment rate, the percentile rank is directly interpreted as the score, whereas for indicators where a lower value indicates better performance, such as mortality and morbidity rate, the score is further calculated as 1 – percentile rank. We use 'P' to denote the score calculated based on this approach.

Z-score approach

While the percentile rank approach provides the performance of a country relative to all other countries, it does not take into account the distribution of the indicator across countries. To take into account the indicator distribution, including the mean and standard deviation, a score is computed based on the z-score. This approach assumes that the indicator values are normally distributed and a z-score for a country is calculated using the standard formula:

$$z=((x - \mu))/\sigma$$

where 'x' is the value for the study country, μ is the mean value across all countries, and 'σ' is the standard deviation.

Based on the z-score, we then used the z-table to obtain the percentage of countries that are performing below the study country. This percentage is used as the score for indicators where higher the value, better the performance, such as life expectancy. For indicators where lower the value, better the performance, such as mortality rate, the score is further calculated as one minus calculated percentage. The score calculated using this approach is denoted by 'Z'.

Based on the scores calculated from the two approaches, we assigned the study country into one of four quartiles: <25%, 25 - <50%, 50% - <75%, and ≥75%.

Performance dashboard results for india

Drawing on these indicators and scoring approach, we present the HLI dashboard for India as an example of settings with moderate data infrastructure. India is a lower-middle income country, according to the 2021 World Bank country classification (World Bank 2021), with a population of about 1.39 billion in 2021 (United Nations Department of Economic and Social Affairs Population Division 2022). Thus, on the dashboard, India is ranked relative to 33 lower-middle income countries. The list of 33 countries is provided in Appendix Table A18.1. Appendix Table A18.2 presents the data sources for each indicator included in the India dashboard. For each indicator, we used most recently available data between 2015 and 2019. We did not use data older than 2015 as they may not reflect the current scenario in the country. We did not use data after 2019, as they may not be comparable to those before the COVID-19 pandemic.

Alignment with national and international goals

In 2015, all Member States of the United Nations (UN) adopted the Sustainable Development Goals (SDGs). The SDGs comprise of an ambitious set of 17 goals and 169 targets addressing the global challenges of poverty, inequality, climate change, environmental degradation, peace, and justice (United Nations General Assembly 2015). The HLI indicators broadly address a number of areas in the SDGs, including Goal 2 on zero hunger, goal 3 on good health and well-being, goal 4 on quality education, goal 5 on gender equality, and goal 8 on decent work and economic growth (United Nations General Assembly 2015).

The HLI indicators chosen for this dashboard are also relevant to the current 2017 Indian National Health Policy, including universal health coverage, life expectancy, child mortality, mortality from major NCDs (cardiovascular diseases, cancer, diabetes, and chronic respiratory diseases), child immunizations, access to medications among those with NCDs, tobacco use, stunting, and gender-based violence (Ministry of Health and Family Welfare, Government of India 2017). Given this, the HLI dashboard could serve as a guide to achieving many of the policy objectives.

RESULTS

Context

Table 18.3 presents contextual information on economic, social, and health indicators for India and compares them, where applicable, with the average for all lower-middle countries and the world, using most recently available data between 2015 and 2019. In 2019, the GDP per capita for India sits just below the average for all lower-middle income countries at US$2,047 or Int$6,887 (US$2,386 or Int$7,566 for lower-middle income countries). It has an adequately equal income distribution with a GINI index of 35.7, and an estimated poverty gap measured at US$3.65 per day (2017 PPP) of 12 percent, making it comparable to that for lower-middle income countries (11 percent), but higher than the global average of 8 percent.

In terms of demography, India has a slightly higher proportion of population aged 60 and over than the average for lower-middle income countries but lower than for the world (10.2 percent in India vs 9.1 percent in lower-middle income countries vs 13.5 percent globally). It also has a higher proportion of working age population; however, the labor force participation rate is much lower. The ratio of female to male labor force participation rate and mean years of schooling in India are also lower than that in lower-middle income countries and globally. Finally, in terms of health profile and service coverage, India has a higher proportion of deaths that are attributable to NCDs and higher UHC coverage compared to the average of lower-middle income countries but lower than the global average.

TABLE 18.3 Indicators of context– India, lower-middle income countries and world in 2019

Indicators of context	India	Lower-middle income countries	World
GDP per capita, in US$ (Int$)	2,047.2 (6,887.5) lower-middle income	2,386.5 (7,566.2)	11,320.9 (17,607.6)
GINI index	35.7	-	-
Poverty gap at $3.65 a day (2017 PPP), as % of the poverty line	12	11	8
Percentage of population aged 60 years and older (%)	10.2	9.1	13.5
Percentage of population of working age (%)	66.9	64.9	64.2
Labour force participation rate (%)	49.3	54.4	60.2†
Ratio of female to male labor force participation rate	28.9	43.6	65.8†
Mean years of schooling among population aged 25 years and over	6.7	7.3	8.9
Percentage of deaths due to NCDs	65.9	62.6	73.6
UHC service coverage index*	61	58	67

*UHC (universal health coverage) service coverage index is defined as the average coverage of essential services based on interventions in reproductive, maternal, newborn and child health, infectious diseases, NCDs and service capacity and access, among the general and the most disadvantaged population (WHO 2022b).
†Modelled ILO estimate.
- N/A

Health indicators (Domains 1-6)

Table 18.4 presents the data and scores based on percentile rank approach (P) and z-score approach (Z) for the HLI health indicators for India. For a majority of the health indicators, P and Z are closely correlated. For most indicators, India falls in the categories of 25 - < 50% (orange) and 50 - < 75% (yellow) among lower-middle income countries. India fares better on obesity than most other lower-middle income countries but lags substantially on the healthy growth indicators (stunting, wasting, and underweight). On the other hand, where gender disaggregated data are available, we find that males score higher than females except in harmful alcohol use and prevalence of hypertension. In other words, males in India fare better than females when compared to their counterparts in other lower-middle income countries. Scores are not available for mental health (current depression) due to lack of comparable data from other countries.

TABLE 18.4 HLI health indicators (domains 1-6) and scores based on percentile rank approach (P) and z-score approach (Z) for India

Domain	Indicators	Both sexes			Males			Females		
		Value	P (out of 100)	Z (out of 100)	Value	P (out of 100)	Z (out of 100)	Value	P (out of 100)	Z (out of 100)
Life expectancy	Life expectancy at birth (years)	-	-	-	69.5	66	68	72.2	47	55
	Life expectancy at age 60 (years)	-	-	-	18.1	84	74	19.5	66	51
	Healthy life expectancy at birth (years)	-	-	-	60.3	53	57	60.4	41	38
	Healthy life expectancy at age 60 (years)	-	-	-	13.0	69	54	13.5	16	23
Mortality at different life stages	Under five years (per 1,000 live births)	33	47	60	-	-	-	-	-	-
	School age (5-14 years, per 100,000 population)	55	47	66	-	-	-	-	-	-
	Youths and young adults (15-29 years, 100,000 population)	-	-	-	127	63	69	113	38	37
	Adults aged 30-69 years (per 100,000 population)	-	-	-	813	59	59	595	47	51
	Older ages (70 years and above, per 100,000 population)	-	-	-	7,512	81	77	6,830	56	60
Child health	*Childhood immunizations*									
	BCG immunization coverage among one-year olds (%)	85	25	41	-	-	-	-	-	-
	DTP3 immunization coverage among one-year-olds (%)	85	50	59	-	-	-	-	-	-
	Polio (Pol3) immunization coverage among one-year-olds (%)	85	56	61	-	-	-	-	-	-
	MCV2 immunization coverage by nationally recommended age (%)	81	68	62	-	-	-	-	-	-
	Healthy growth									
	Stunting prevalence among children under 5 years	34.7	8	17	-	-	-	-	-	-
	Wasting prevalence among children under 5 years	17.3	0	0	-	-	-	-	-	-
	Underweight prevalence among children under 5 years	33.4	0	0	-	-	-	-	-	-

Domain	Indicators	Both sexes			Males			Females		
		Value	P (out of 100)	Z (out of 100)	Value	P (out of 100)	Z (out of 100)	Value	P (out of 100)	Z (out of 100)
Adult immunizations	Tetanus vaccination coverage for pregnant women (%)	90	24	48	-	-	-	-	-	-
	COVID-19 vaccination (two doses) coverage for all ages (%)	67	81	83	-	-	-	-	-	-
Access to care for NCDs and NCD management	Prevalence of treatment (taking medicine) for hypertension among population aged 30-79 with hypertension (%)	-	-	-	17	69	66	25	56	55
Risk factors	Tobacco use prevalence among population aged 15 years and over (%)	-	-	-	23	59	66	3	44	63
	Cigarette smoking prevalence among population aged 15 years and over (%)	-	-	-	10	90	85	1	59	66
	Tobacco use prevalence among youths aged 15-24 years (%)	-	-	-	12	63	73	2	50	64
	Ratio of former to current smokers aged 45-59 years	-	-	-	0.27	16	27	0.33	22	35
	12-month prevalence of harmful alcohol use among population aged 18 years and over (%)	-	-	-	2	56	70	0.1	81	83
	Obesity prevalence among population aged 20 years and over (%)	-	-	-	3	94	82	5	91	88
	Prevalence of type 2 diabetes among population aged 20-79 years (%)	10	25	40	-	-	-	-	-	-
	Prevalence of hypertension among population aged 30-79 years (%)	-	-	-	25	41	48	24	78	74
	Prevalence of current depression among population aged 18 years and over (%)	-	-	-	2.4			3.0		

Score of <25% Score of 25-<50% Score of 50-<75% Score of ≥75% Not available Not analyzed/not applicable

Social and economic indicators (Domains 7-10)

Table 18.5 shows the P and Z scores for the HLI social and economic indicators for India. For many of these indicators, India falls in the 50 - < 75% category. However, India performs worse than 50 percent of other lower-middle income countries on intimate partner violence. Furthermore, it performs worse than 75 percent of other lower-middle income countries in female labor force participation rate and the ratio of female to male labor force participation.

TABLE 18.5 HLI social and economic indicators (domains 7-10) and scores based on percentile rank approach (P) and z-score approach (Z) for India

Domain	Indicators	Both sexes			Males			Females		
		Value	P (out of 100)	Z (out of 100)	Value	P (out of 100)	Z (out of 100)	Value	P (out of 100)	Z (out of 100)
Education	Learning adjusted years of school by age 18 (out of 14)	-	-	-	7.1	76	58	57	72	57
Gender equality	Percentage of ever-partnered women aged 15-49 years who experienced physical and/or sexual violence by current for former partner in the previous 12 months (%)	-	-	-	-	-	-	18	30	28
	Percentage of women's (aged 15-64) work time (paid and unpaid) spent on unpaid work (%)	-	-	-	-	-	-	65	56	59
	Ratio of female to male labor force participation rate	-	-	-	-	-	-	35	16	12
	SIGI index	-	-	-	-	-	-	34	67	72
Labour force	Labour force participation rate among population aged 15 years and over	-	-	-	76	80	61	26	16	24
Social protection	Population covered by at least one social protection cash benefit (excluding health)*	24	52	51	-	-	-	-	-	-
	Public expenditure on social protection (excluding health), as % of GDP	1.4			-	-	-	-	-	-

Score of <25% · Score of 25-<50% · Score of 50-<75% · Score of ≥75% · Not available · Not analyzed/not applicable

* Proportion of the total population receiving at least one contributory or non-contributory cash benefit, or actively contributing to at least one social security scheme.

DISCUSSION

The performance measurement literature identifies four pathways to improvement through public reporting (Berwick, James and Coye 2003; Hibbard, Stockard and Tusler 2003; Hibbard 2008): the change pathway (providers of services use comparative information to improve performance); the selection pathway (health system users apply comparative information to change care consumption from poor to good performers); pay-for-performance (providers who achieve standards or targets receive financial rewards); and reputational damage (providers who perform poorly suffer damage to their public reputation from regular public reports). These four pathways are consistent with the public sector literature on performance management, which classifies performance improvement pathways depending on their internal or external source of control and on the supportive or punitive actions derived from the controls (Boland and Fowler 2000; Veillard et al. 2005).

The use of global performance dashboards as a monitoring tool has been increasing in recent years owing to their ease of use and effectiveness in communicating information about complex systems. Globally, performance dashboards have been developed and used by governments and multilateral organizations to monitor status and progress in global development or for specific sectors such as health, education, or other fields. Numerous dashboards exist in global health, such as the SDG Dashboard (Sachs and others 2023), the UNICEF Child health and well-being dashboard (UNICEF 2022), the ILO World Social Protection Data Dashboards (ILO 2020), and the World Bank Human Capital Index, all performance dashboards serving specific purposes. However, to the best of our knowledge, no performance dashboards have been developed with a focus on health longevity, which is defined by the WHO as "the process of developing and maintaining the functional ability that enables wellbeing in older age" (WHO 2020). Here, we present an HLI dashboard that LMICs can use to monitor their status related to human capital, NCDs, and healthy longevity. The dashboard presented in this paper follows the change pathway, providing opportunities for government to identify priorities for action derived from international comparisons with peer countries.

In addition to focusing on healthy longevity, the novelty of the HLI dashboard lies in its focus on international comparisons. In the HLI dashboard, for each country and indicator, two scores are assigned to indicate the country's performance relative to all other countries in the same income strata. These scores are calculated based on the percentile rank approach and the z-score approach, respectively. The first, percentile rank approach, has been previously used in the SDG Index to compare performance across all countries (Schmidt-Traub and others 2017). The second z-score approach of scoring adds an additional dimension to understanding the cross-country data by accounting for the distribution of the indicator across countries. This z-score approach of scoring has not been used by any previous global health performance dashboard, to the best of our knowledge. The dashboard is an Excel-based tool which does not require intensive technology or capacity training. Hence, it can be readily adopted by LMICs. Due to its focus on LMICs, some of the indicators, such as children underweight, may not be relevant to many high-income settings.

The current HLI dashboard relies on data readily available in the public domain. As such, LMICs can replicate the dashboard for their countries without the need for additional data collection. However, relying only on readily available data restricts the range of indicators included in the dashboard. Due to this, there are, for example currently no indicators available internationally on important performance dimensions relevant to human capital and healthy longevity, such as adult immunizations (e.g., human papillomavirus immunization among adolescent girls, flu immunization at all ages, and herpes zoster at older ages), ongoing education among adults, adult population that are free of NCDs, and public expenditure on long term care and on pensions. Although performance for these indicators is expected to be very low in LMICs, collection of such data and regular surveillance is essential to monitor the status of human capital and healthy longevity.

Further, not all the indicators selected in the performance dashboard can be calculated at national level, limiting the understanding of variation in performance at a sub-national level. This limits the use of data at sub-national level, in the highly decentralized politico-administrative context of India. Complementing the indicators selected with additional or substitutive indicators that can be calculated at sub-national level and be made useful to decision-makers able to act on findings will be an important next step in tailoring this performance dashboard to the needs of policymakers in India.

Finally, improving the usability of the dashboard for decision-making requires understanding in greater detail the nature of actions by government and other actors (including the private sector) required to improve performance. This is of particular importance for indicators requiring multi-sectoral interventions to drive better performance, such as nutrition indicators for example.

CONCLUSION

This performance dashboard offers a compelling, simple, and intuitive approach to measure performance on healthy longevity, a critical challenge to many middle-income and high-income countries, and an emerging challenge for many low-income countries.

The dashboard uses existing data and is grounded in performance measurement systems implemented at scale in most countries. It should not however preclude countries from investing in building up their essential data infrastructure to produce performance information of sufficient granularity to enable relevant decision-making at the appropriate governance level, with information of high quality and of relevant timeliness and granularity. In addition, further research is required in understanding the drivers of healthy longevity, improving its measurement, and producing performance dashboards of use to policymakers. Engaging with the general public on indicators selection and general design of the performance dashboard will be a condition for usefulness of the approach and strengthening accountability for better results (Veillard et al. 2015).

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ANNEX 18.1

TABLE 18A.1 List of 33 lower-middle income countries with population of more than 7 million in 2020

Algeria	Ghana	Myanmar	Tunisia
Angola	Haiti	Nepal	Ukraine
Bangladesh	Honduras	Nigeria	Tanzania
Benin	India	Pakistan	Uzbekistan
Bolivia	Indonesia	Papua New Guinea	Viet Nam
Cambodia	Iran	Philippines	Zimbabwe
Cameroon	Kenya	Senegal	
Côte d'Ivoire	Lao People's Democratic Republic	Sri Lanka	
Egypt	Morocco	Tajikistan	

TABLE 18A.2 Indicator data sources for the HLI India dashboard

Indicators	Data sources
GDP per capita GINI index Poverty gap at $3.65 a day (2017 PPP), as % of the poverty line	World Bank 2022.
Percentage of population aged 60 years and older Percentage of population of working age	United Nations Department of Economic and Social Affairs Population Division 2022.
Labour force participation rate Ratio of female to male labour force participation rate	World Bank 2022.
Mean years of schooling	Global Data Lab 2013-2023; Smits and Permanyer 2019.
Percentage of total deaths due to NCDs	WHO 2020.
UHC service coverage index	WHO 2022a.
Life expectancy at birth Life expectancy at age 60 Healthy life expectancy at birth Healthy life expectancy at age 60	WHO 2022b.
Under-five mortality rate (per 1,000 live births) School age (age 5-14 years) mortality rate (per 100,000 population) Mortality rate among youths and young adults (age 15-29 years) (per 100,000 population) Adult (aged 30-69 years) mortality rate (per 100,000 population) Mortality rate at older ages (aged 70 years and above) (per 100,000 population)	WHO 2020.
Percentage of one-year olds who received three doses of diphtheria tetanus toxoid and pertussis (DTP3) immunization. Percentage of one-year olds who received three doses of polio (Pol3) immunization. Percentage of one-year olds who received two doses of measles (MCV2) immunization	WHO 2022b.
Stunting prevalence among children under 5 years Wasting prevalence among children under 5 years Underweight prevalence among children under 5 years	WHO 2022b.
Percentage of mothers whose last birth was protected against neonatal tetanus	WHO 2022b.
Percentage of population that received at least two doses of COVID-19 vaccination	Mathieu and others 2022

Indicators	Data sources
Percentage of population aged 15+ years who currently use tobacco Youth tobacco use (percentage of population aged 15-24 years who use tobacco) Ratio of former to current smokers aged 45-59 years	Institute for Health Metrics and Evaluation (IHME) 2022.*
Percentage of population aged 15+ years who smoke cigarettes Percentage of population aged 15+ years who practice harmful use of alcohol in the past 12 months Percentage of population aged 20+ years who have overweight or obesity	WHO 2022b.
Percentage of population aged 20-79 years who have type 2 diabetes	International Diabetes Federation 2021.
Percentage of population aged 30-79 years who have hypertension	WHO 2022b.
Percentage of population aged 18 years and older who currently have depressive disorders	Gururaj and others 2016.
Percentage of population aged 30-79 years with hypertension that are currently taking antihypertensive medication	WHO 2022b.
Learning-adjusted years of schooling at age 18	World Bank 2021.
Prevalence of intimate partner violence among ever-partnered women in the past 12 months	WHO 2019.
Percentage of women's work time (paid and unpaid) spent on unpaid work	ILO 2018.
Ratio of female to male labor force participation rate	World Bank 2022.
Social Institution and Gender Index (SIGI)	OECD 2019.
Labor force participation rate among population aged 15 years and over	World Bank 2022.
Population covered by at least one social protection cash benefit (excluding health) †	ILO 2020.
Public expenditure on social protection (excluding health), as % of GDP	ILO 2020.

* We included estimates of tobacco use from the GBD because they were generated from nationally representative surveys on tobacco use.
†Proportion of the total population receiving at least one contributory or non-contributory cash benefit, or actively contributing to at least one social security scheme.

ANNEX 18.1 REFERENCES

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