DELHI SCHOOL OF ARTIFICIAL INTELLIGENCE

3 GOOD HEALTH AND WELL-BEING

EDUCATION Ai

Healthy lives & well-being for all across all ages

Artificial Intelligence for Good Health & Well-Being

SDG 3 is experiencing limited progress across all 13 targets, with only 1 target on track (3.9 Health Impact of Pollution).

The United Nations reports a global decline in life expectancy since COVID-19, dropping from 73.1 years in 2019 to 71.4 in 2021. Inequalities among regions significantly contribute to the lack of access to health services and rising death rates, posing challenges for lower- and middle-income countries and especially Least Developing Nations in achieving their targets.

Ai's impact on SDG 3 is well documented in various AI use case repositories: 20 use cases out of 40 in the AI for Good: Innovate for Impact, and approximately 85 use cases out of 408 in the UN Activities on AI. For instance, AI can enhance diagnostics by efficiently reviewing patient data.

With the recent AI revolution, medical diagnostics can be improved to revolutionize new patient approaches, with practitioners increasingly seeking AI-driven tools to enhance patient health and quality of life. New treatments using AI can connect Amyotrophic lateral sclerosis (ALS) patients with their loved ones. Similarly, robots are now providing comfort to patients and their families by taking over some care activities. Additionally, AI can support and expedite the development of new drugs more efficiently, as demonstrated by the development of one of the vaccines during Covid-19.

AI can also optimize the overall management of health-related processes, making them more cost-effective. By enhancing patient diagnosis and drug development, AI has the potential to reduce the costs of medicine, making it more affordable. One significant risk associated with AI and SDG 3 is that many of these use cases originate from developed countries, raising concerns about the affordability of these technologies for individuals in countries with fewer resources. This could widen the gap in SDG 3 outcomes between countries. Additionally, **mental health is increasingly negatively associated with AI, as practitioners are expected to keep up with new technologies, leading to additional stress and feelings of inadequacy.** Governments should account for this risk by putting the user at the center of AI development and supporting patient-centric processes. Furthermore, health data is highly sensitive and as AI relies on patient data, there is a significant risk of creating biases based on discriminatory dimensions (gender, ethnicity, etc.) or potential data breaches. These risks should be considered in the development of solutions.

Key Considerations for Stakeholders

WHO six AI principles: AI solutions should be aligned with the six principles advocated by the WHO:

1) Protecting human autonomy
2) Promoting human well-being and safety and the public interest
3) Ensuring transparency, explainability and intelligibility
4) Fostering responsibility and accountability
5) Ensuring inclusiveness and equity
6) Promoting AI that is responsive and sustainable

Impact

AI can act as a positive enabler for 69% of the SDG 3 targets and act as an inhibitor (negative) for only 8% of the targets.

Use case 1

Leveraging AI to improve and support patient diagnostics to help make the diagnostic process faster, more efficient and transparent.

Use case 2

Using AI instruments to improve the quality of life of patients and their families by generating new technology-driven solutions such as connected prosthetics.

Use case 3

Implementing AI solutions at scale to drive down the cost of medicine and healthcare related activities.

Good health and well-being

- The COVID-19 pandemic has ravaged global health, undoing nearly 10 years of progress in life expectancy. While most health-related indicators are moving in the right direction globally, current trends are insufficient to meet targets set for 2030.
- The maternal mortality ratio is largely stuck at a level more than three times the 2030 target. Under-5 deaths reached an historic low in 2022, but progress has slowed. Without accelerated declines, 35 million children will not live to see their fifth birthday by 2030.
- The global response to infectious diseases has saved millions of lives and paved the way for healthier communities. Inequalities and emerging threats jeopardize these accomplishments, however, underscoring the need for sustained efforts and innovative strategies.
- More than half the world's population is not covered by essential health services, while an ageing health workforce must now meet growing demands from an ageing population. Ensuring universal health coverage without financial hardship is crucial to healthy lives and well-being for all.

A child receives an oral polio vaccine during the launch of a nationwide polio campaign in Malawi.

The world is not on track to achieve Goal 3. Changing course requires prioritizing the achievement of universal health coverage, strengthening health systems, investing in disease prevention and treatment, and addressing disparities in access to care and services, especially for vulnerable populations.

The COVID-19 pandemic turned back progress in life expectancy and gains in combating communicable diseases.

Twenty-one million children missed out on lifesaving vaccines in 2022

Between 2000 and 2019, the proportion of children receiving three doses of the diphtheria, tetanus and pertussis (DTP3) vaccine rose from 72 to 86 per cent, then dipped to 81 per cent in 2021 before rebounding to 84 per cent in 2022.

In 2022, 20.5 million children missed at least one routine vaccine and 14.3 million received no vaccines at all. Coverage of two doses of the measles vaccine and three doses of the pneumococcal conjugate vaccine increased in 2022, reaching 74 per cent and 60 per cent, respectively, following stagnation in 2020–2021.

Global coverage of the human papillomavirus (HPV) vaccine, critical for women's and girls' health, stood at only 15 per cent in 2022, despite 130 countries introducing it in their national immunization services by the end of the year.

Progress towards universal health coverage has slowed, leaving billions without care and subject to catastrophic costs

Essential health service coverage is measured using an index, reported on a score of 0 to 100, based on 14 indicators across four domains: reproductive, maternal, newborn and child health; infectious diseases; non-communicable diseases; and service capacity and access. The global score on the index increased remarkably from 45 in 2000 to 65 in 2015. Progress slowed thereafter, however, reaching a score of only 68 in 2021. The proportion of the population lacking essential health services fell by approximately 15 per cent between 2000 and 2021. Yet minimal progress after 2015 left about 4.5 billion people without coverage in 2021, especially in rural and poorer populations.

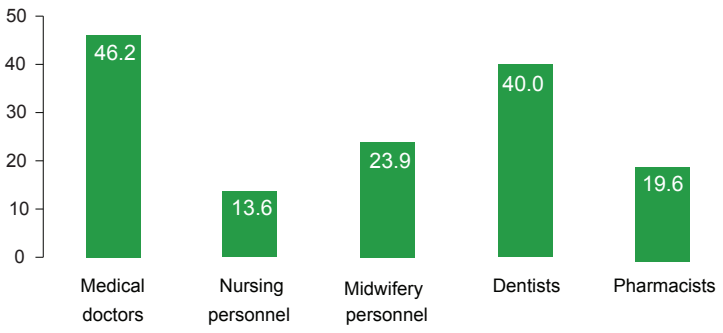
Financial hardship due to out-of-pocket health spending has worsened affecting 2 billion people in 2019. This included 1 billion people facing catastrophic health expenditures exceeding 10 per cent of their household budget and 344 million driven deeper into extreme poverty.

An ageing health workforce struggles to meet rising demands from an ageing population

Progressing towards universal health coverage requires addressing the global shortage of health workers. Yet data from 2015 to 2022 reveal stark disparities, with low-income countries experiencing the lowest health worker density and distribution. Per 10,000 people, these countries had medians of only 1.1 medical doctors, 7.5 nursing and midwifery personnel, 0.04 dentists and 0.2 pharmacists, compared with medians in high-income countries of 35.6 medical doctors, 76.8 nursing and midwifery personnel, 7.0 dentists and 8.8 pharmacists.

Health systems are experiencing increased strains in catering to the mounting health needs of an ageing global population, more so because the health workforce itself is ageing. An estimated 1.8 million additional health workers are needed in 54 countries, primarily high-income ones, to replace retiring health professionals and maintain the current age-standardized density of health workers.

Share of countries with an ageing workforce, by health occupation, 2017–2022 (percentage)



Note: A health workforce is considered "ageing" when the share of health workers aged 55 years and above exceeds that of health workers aged 35 years and below.

Global Youth AI Advisory Body

Delhi School of Artificial Intelligence