COMMENTARY

Redefining Assistive Technology: A Shift from Disability to Functional Impairments in Policy and Practice

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INTRODUCTION

Achieving the Sustainable Development Goals (SDG) and ensuring inclusive universal health coverage (UHC) with the goal of "leaving no one behind" has sparked a global dialogue on Assistive Technology (AT) or Assistive Products (AP).(1) This conversation has driven innovation and transformed lives, yet the unmet needs for AT are significant globally. The WHO-UNICEF Global Report on Assistive Technology (GReAT) 2022 reported that in low- and middle-income countries (LIMCS), as low as 3% of the population needing AT has access to these life-changing tools.(2) Further, it is estimated that by 2050, two billion people will require AT, yet 90% of them, particularly in LMICs, will lack access.(3)

The International Organization for Standardization (ISO) has defined "assistive product as any product (including devices, equipment, instruments, and software), specially produced or generally available, used by or for persons with disability for participation; to protect, support, train, measure or substitute for body functions/structures and activities; or to prevent impairments, activity limitations or participation restrictions.(4) For ease of understanding, the authors use AT as the umbrella term in the rest of the article for Assistive technology or aids or products or services.

The common association of AT with disability narrows the perception of AT use.(5) For example, a person struggling with reduced vision due to refractive errors or someone recovering from a major surgery may not be classified as disabled but could greatly benefit from AT, such as screen readers, spectacles, bedside guards, modified commode chairs, fall detectors, incontinence products, or mobility aids.(6) AT enhances physical and functional abilities while promoting independent living, social inclusion, education, employment, and economic growth. Therefore, the applications of AT are not limited to disabilities but go far beyond, as the GReAT highlighted that nearly everyone would need AT temporarily or permanently at some point in their lifetime.(2)

However, existing policies in many countries narrowly define AT as a tool exclusively for persons with disabilities (PwDs), leaving a vast number of individuals with functional impairments underserved. This study argues for a broader definition of AT, including Persons with Functional Impairments (PwFI), aligning with global health frameworks such as UHC and the WHO's Essential Assistive Products List (EAPL). We highlight the lack of inclusive AT policy and propose a globally scalable model to improve AT access by examining a case study from India.

WHY "FUNCTIONAL IMPAIRMENTS" MATTER?

Disability refers to long-term physical, mental, intellectual, or sensory impairments that, in interaction with various barriers, may hinder the full and effective participation of people in society on an equal basis with others.(7) The definition of

disability excludes the plight of persons with temporary and progressive impairments who do not qualify for the medical model of disability but face concerns related to deteriorating physical and/ or mental health.

Functional Impairment is a broader term concerning the physical aspect of health.(8) It refers to the limitation or loss of an individual's ability to perform tasks or activities necessary for daily living due to a physical, mental, or emotional condition. In the context of diversity, equity, and inclusion, recognizing and accommodating functional impairments is critical to fostering an inclusive and equitable environment where everyone can participate fully and contribute meaningfully.(9)

Functional impairments can be temporary, such as mobility challenges following surgery or injury; progressive, like vision or hearing loss associated with aging; or long-term, as seen in chronic conditions such as arthritis or neurological disorders.(10,11) Addressing functional impairment instead of disability would shift the narrative from categorizing individuals by a medical diagnosis to addressing specific challenges they face in performing everyday tasks. Millions of people worldwide with functional impairments are excluded from government and non-government AT programs due to restrictive eligibility criteria. Many are forced to live in dependence and social isolation or shoulder the financial burden of purchasing AT out of pocket.

The Present Definition of Assistive Technology

The WHO defined AT as "the application of organized knowledge and skills related to assistive products, including systems and services. Assistive technology is a subset of health technology. An assistive product is any external product (including devices, equipment, instruments, or software) specially produced or generally available, primarily to maintain or improve an individual's functioning and independence and thereby promote their well-being. Assistive products are also used to prevent impairments and secondary health conditions."(2)

Similarly, the ATscale global partnership for Assistive Technology hosted by the United Nations defines AT as "an umbrella term for assistive products such as wheelchairs, hearing aids, prostheses, eyeglasses, or digital devices, and their related systems and services. AT can facilitate people's ability to move, communicate, and see better."(12)

These global definitions of AT emphasize an inclusive framework focusing on functionality, independence, and prevention rather than simply addressing the needs of individuals categorized as disabled. Some countries have adopted broader definitions and frameworks that address functional impairments beyond traditional disability classifications. For instance, the UK defines AT as "Products or systems that support and help individuals with disabilities, restricted mobility, or other impairments to perform functions that might otherwise be difficult or impossible. These devices support individuals to improve or maintain their daily quality of life by easing or compensating for an injury or disability."(13)

Despite global progress, ISO and many countries, including India, South Africa, the United States of America, and Australia, continue to define AT through a narrow disability-focused lens, failing to realize its full potential to deliver social, economic, and health benefits. This is particularly evident in India, where restrictive policies leave millions underserved.

A Case of India

In India, the National Trust for the Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation, and Multiple Disabilities has defined AT as "Aids and assistive devices are the supporting devices used by persons with disabilities (PwDs) in improving their quality of life in terms of mobility, communication and for performing their daily activities."(14) The focus is on long-term impairments defined as disabilities according to the Rights of Persons with Disabilities (RPwD) Act, 2016, in compliance with the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD). Further, the literature shows that government and non-government aid for accessing affordable ATs requires a benchmark disability certificate (i.e., at least 40% impairment).(15)

The most extensive National program for accessing AT in India - Assistance to Persons with Disabilities for Purchase/Fitting for Aids/Appliances (ADIP) by the Ministry of Social Welfare and Empowerment supports individuals with such certificates exclusively.(16) Rashtriya Vayoshri Yojana focuses on providing aid to "eligible" Senior citizens in the BPL category. Still, again, "eligible" being the keyword, the scheme would benefit senior citizens suffering from disabilities.(17) Further, AT does not have complete private insurance coverage in India, compounding the accessibility challenges and

increasing out-of-pocket expenses, making access to AT fragmented and target group specific.(18)

This narrow approach creates a Cinderella Effect, sidelining and neglecting the needs of individuals who do not meet strict disability classifications but face significant functional limitations. This binary view has left the needs of 250 million people unmet in India.18 Further, with an accelerated aging population, countries like India, where 8.6% of the population was over 60 in 2011 and is projected to exceed 13% by 2031, face an impending crisis in AT access.(19,20) Further, a shift from infectious diseases to chronic diseases has increased the chronic disease burden in the country.(21) Similar demographic shifts are observed worldwide, magnifying the urgency of broadening AT definitions.

India's National List of Essential Assistive Products (NLEAP), published in September 2023 by the Indian Council of Medical Research (ICMR), marks a promising step by including the term "functionally impaired."(22) However, a lack of specific policy or legislation related to AT leaves a huge policy gap in addressing the unmet AT needs in the country. Broadening the definition of AT to include functional impairments would ensure that policies address the diverse needs of individuals and promote equity in access.

Conclusion

AT is generally considered a means to participate in community and society on an equal footing with others; without it, people may develop secondary impairments, suffer exclusion, are at risk of isolation, live in poverty, may face hunger, and be forced to depend more on family, community and government support.(23) Focusing solely on PwDs limits our understanding of ability and excludes a large segment of society. PwDs represent only a subset of the wider group of persons with functional impairments. Broadening our focus to include all those with functional impairments and increasing access to AT can empower millions of people who have been overlooked, enabling them to realize their full potential.

Access to AT is a human right and an economic opportunity. ATscale estimates that access to AT could increase lifetime earnings by $100,000 for a child in a low- or middle-income country. Further, investment in only four products - hearing aids, prostheses, eyeglasses, and wheelchairs would result in a return on investment of 9:1.(12) Redefining AT to address functional impairments can unlock economic and social benefits globally by improving productivity, reducing healthcare costs, and promoting equitable health systems aligned with the Sustainable Development Goals. AT financing models can include insurance coverage, public-private partnerships, and tax incentives.

Policymakers should broaden the definition of AT and eligibility criteria for AT access to include persons with functional impairments (PwFi). The use of the term "persons with functional impairments" instead of "persons with disability" in defining AT would move beyond restrictive labels, ensuring that policies reflect and respond to the diverse needs of the population. It is important to note that the authors advocate for AT policy and access to affordable resources to support individuals with functional impairments, enabling them to live with ease, dignity, and independence. However, they do not recommend additional benefits in education and employment, as provided to PwDs.

In the words of WHO Director-General Dr Tedros Adhanom Ghebreyesus, "Denying people access to these life-changing tools is not only an infringement of human rights, it's economically shortsighted. We call on all countries to fund and prioritize access to assistive technology and give everyone a chance to live up to their potential."(23)

This study is a commentary and does not present primary empirical research; hence, its conclusions are based on existing literature, policy analysis, and expert insights rather than original data collection. While the article advocates for a shift in policy framing from disability to functional impairments, it does not include stakeholder perspectives such as those of AT users, caregivers, or service providers.

Authors Contribution

IS - Writing–original draft and data curation; SR Conceptualization; GR, SSS - Review and editing; RS Supervision.

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Conflict of Interest

There are no conflicts of interest.

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Declaration of Generative AI and AI Assisted Technologies in the Writing Process

The authors haven't used any generative AI/AI assisted technologies in the writing process.

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