

Is Innovation the Solution to Assistive Technology Access Barriers in Low-Resource Areas?

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BACKGROUND

It's estimated that 2.5 billion people globally need Assistive Technology (AT).

Within low-resource settings (such as low-and-middle-income countries (LMIC), remote areas and in humanitarian contexts), only 1 in 10 people who need AT currently have access to it.

(WHO & UNICEF, 2022)

ACCESS BARRIERS

The barriers to accessing AT in low-resource settings are well documented and include:

- financial resources
- technology and infrastructure
- limited availability of products, services, facilities and trained personnel
- political and environmental climates
- low knowledge and awareness of AT
- limited user involvement in product design
- social stigma and cultural beliefs



FINANCIAL BARRIERS

Finance is among the most cited barrier to accessing AT, making affordable AT one of the highest priorities in low-resource settings.

Specific affordability issues include:

- high costs of services and products
- inefficient supply chains
- lack of government funding and poor financial management
- lack of public health insurance

(Htwe et al., 2024)

OUT-OF-POCKET COSTS

Healthcare expenditures in LMICs (including assistive products) are often out-of-pocket.

Many people are forced to choose between products and their other basic needs, such as housing, food and education fees.

(Owen, 2024)



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3D PRINTING

3D printing has shown potential to bridge some gaps in availability of acceptable AT through local design and production of context specific products.

(Hussain & Brown, 2024)

OPEN-SOURCE DESIGNS

Open-source designs freely shared and non-proprietary, offer a promising solution by enabling low-cost, locally produced assistive products via 3D printers or other manufacturing processes.

(Baleotti et al., 2024)

ARTIFICIAL INTELLIGENCE

Generative AI-driven apps and software offer free or low-cost alternatives to expensive AT.

This could improve access when cost would otherwise be a barrier to accessing AT, such as communication devices.

AI-DRIVEN TOOLS

Speech generation devices (SGDs) or Augmentative and Alternative Communication Devices (AACs) to support people with communication or expressive language challenges can be very costly.

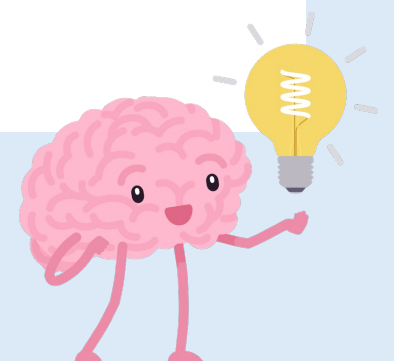
It's difficult to access public funding, and service provision for prescription, training and follow up can have long wait times.

- *speech transcription* to text (such as Google's Live Transcribe) is an alternative to support people with TBI, neurodivergence, or anyone with challenges hand-writing.

- *word finding apps* (AphasiaGPT) enables people with communication disorders to use their smartphone camera feature to identify the words of objects around them, build their vocabulary and practice context-based conversations.

Aphasia_{GPT}

Language recovery, reimagined through AI.



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Is Digital Innovations in Rural/Remote Settings Necessary?

1) Remote visits with patients for training and follow up on AT usage

2) Remote meetings with other assistive technology personnel, such as product vendors

3) Remote supervision of OT Assistants or students on role emerging placements

Considerations and Cautions of AI Usage for AT

- global disparity of AI access and readiness of adoption could perpetuate existing digital divide
- clients with low digital literacy or low interest in adoption may be 'left behind'
- lack of guidelines and safety standards for usage within OT clinical practice
- uncertainty of AI usage within OT educational programs and how AI could support or hinder quality of clinical training
- environmental impact of AI usage
- concerns with data security and protection of privacy
- psychological safety for users (e.g. mental health support, guidelines to protect youth)
- cultural differences and inherent biases of AI programming (not representative of all worldviews and knowledge systems)

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