

EDITORIAL

The Silent Burden of Communication Disorders: Artificial Intelligence for Transforming Recognition, Informed Decisions and Outcomes

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Communication is a fundamental human right and the cornerstone of learning, employment, social participation and overall well-being. Communication disorders including speech, language, voice, fluency, hearing, and cognitive abilities, affect hundreds of millions of people worldwide. The World Health Organization (WHO) reported that more than 430 million people have hearing loss that is incapacitating, while millions more experience acquired and developmental communication disorders associated with autism spectrum disorder, stroke, traumatic brain injury, Parkinson's disease, dementia and other neurological conditions.¹

Due to a lack of epidemiological data, underreporting, insufficient screening programs and a shortage of speech-language pathologists the actual prevalence in Pakistan is still unknown. Consequently, many people remain undiagnosed or only receive intervention after the most effective period for recovery has been lost. Communication disorders represent a silent burden, making them one of the most overlooked health challenges.² In contrast to physical disabilities, communication difficulties such as problems with speaking, understanding, reading, writing, or social communication often go unrecognized which can result in delayed diagnosis, poor academic performance, unemployment, social isolation, psychological distress, and a lower quality of life. The nature of these impairments can make early recognition difficult, complicating clinical assessment and delaying informed decision-making.³

Artificial intelligence (AI) offers an unprecedented opportunity to make invisible burden visible by identifying early or subtle changes in speech language, and communication abilities that may not be readily observed during traditional clinical

assessment. Progress in speech analytics, natural language processing, machine learning, and digital biomarkers can generate objective data to supplement traditional evaluation methods and support more accurate and timely clinical decision making.⁴

In particularly AI driven technologies will make an impact in resource-constrained settings where access to specialist services by speech-language pathologists may be limited. Automated speech-language screening and assessment tools powered by AI could enable earlier detection of communication disorders, objective measurement of speech and language abilities, tracking of progress over time and flagging/referral prioritization of those in need of specialist services. Technologies with built-in intelligence may also bring rehabilitation outside of traditional clinical settings via telepractice or remote monitoring and personalized therapy powered by machine learning that can adapt to the learner's performance and provide just-in-time feedback. Clinical decision-support systems may help streamline and improve management by integrating assessment information with up-to-date evidence to guide more consistent, efficient and evidence-informed practice.⁵

However even with these advancements technologies are meant to augment clinical practice not replace clinicians. The ethical integration of these technologies into practice includes interpretable algorithms, equity across demographic groups, patient privacy, clinical validity, and accounting for variability in language and culture. It is also important to note the clinical knowledge, reasoning, and sensitivity of speech-language pathologists. Building therapeutic relationships understanding each individual's unique circumstances and delivering person-centered care remain fundamentally human responsibilities that cannot be replicated by technology alone.⁶

Addressing the hidden burden of communication disorders will require a collaborative approach in which technological innovation and clinical expertise work together. When implemented ethically and

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integrated thoughtfully into speech-language pathology practice, AI can support earlier recognition of communication difficulties, strengthen clinical decision-making, expand access to high-quality rehabilitation and ultimately improve participation, independence, and long-term quality of life for individuals living with communication disorders.⁷

REFERENCES

1. World Health Organization. Regulatory considerations on artificial intelligence for health. Geneva: World Health Organization; 2023.
2. De la Fuente Garcia, S., Ritchie, C. W., & Luz, S. (2020). Artificial intelligence, speech, and language processing approaches to monitoring Alzheimer's disease: A systematic review. *Journal of Alzheimer's Disease*, 78(4), 1547–1574.
3. World Health Organization. World report on hearing. Geneva: World Health Organization; 2021.
4. Van Gelderen, L., & Tejedor-García, C. Innovative speech-based deep learning approaches for Parkinson's disease classification: A systematic review. 2024.
5. Moell, B., Aronsson, F. S., Östberg, P., & Beskow, J. The order in speech disorder: A scoping review of state-of-the-art machine learning methods for clinical speech classification. 2025.
6. Gallano G, et al. Artificial intelligence in speech-language pathology and dysphagia management. 2025.
7. Georgiou GP. Transforming speech-language pathology with AI: opportunities, challenges, and ethical guidelines. *Healthcare*. 2025;13(19):2460.

CONFLICT OF INTEREST

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