



Importance of Rehabilitates' and Rehabilitation Professionals' Voices in the Development of AI-Based Virtual Assistants

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Hybrid rehabilitation combines remote and face-to-face interventions, enabling more flexible and accessible treatment models. Within this context, AI-based virtual assistants (VAs) have the potential to enhance the accessibility, interactivity, and continuity of rehabilitation services. However, the successful implementation of such solutions requires careful consideration of technical, ethical, and social dimensions, as well as evidence-based knowledge of their acceptability among end users. Despite recent advances, experiential knowledge regarding the opportunities and challenges of integrating VAs into rehabilitation processes remains limited.

For AI-based solutions to be effectively adopted in rehabilitation, developers must understand the rehabilitation process across different system levels. At the outset of developing AI-based virtual assistants, we conducted a literature review to establish a shared conceptual foundation. In addition, interviews were carried out with decision-makers responsible for funding and providing rehabilitation to explore their perspectives on the role of artificial intelligence and virtual assistants in the multiple sclerosis (MS) rehabilitation process.

Within the international HybReDe project, virtual assistants utilising retrieval-augmented generation (RAG) architecture were developed. The usability of large language model (LLM)-based virtual assistants was evaluated through focus group interviews and the System Usability Scale involving people with MS and rehabilitation professionals. Based on these findings, subsequent versions of the virtual assistant were developed using validated information sources and an alternative solution architecture incorporating instruction fine-tuning.

The forthcoming pilot study will be guided by the Technology Acceptance Model (TAM). Building on the ten acceptability-related areas identified by Haydon et al. (2023), the study will focus on affective attitude, perceived impact and benefit, perceived workload, and perceived ability. The aim is to examine the acceptability of virtual assistants among people with MS and MS rehabilitation professionals, as well as the feasibility of deploying such solutions in everyday rehabilitation practice.

Keywords: Artificial intelligence; virtual assistant; rehabilitation; acceptability; multiple sclerosis



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