



EDITORIAL

Bridging the gap: integrating neurodivergence into rehabilitation plans for adults

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Neurodivergence is a broad term that encompasses Autism spectrum disorder, attention-deficit hyperactivity disorder (ADHD), and other neurodevelopmental conditions, including specific learning disorders. While it is often first recognized in childhood or adolescence, it is frequently underestimated in adulthood and among the elderly. About a fifth of the human population can be defined as neurodivergent,¹ and neurodivergent adults have an increased risk of various clinical conditions, particularly cerebrovascular disorders, chronic pain syndromes, osteoporosis, ischemic heart disease, diabetes, and depression, with a high risk of suicide.²

Therefore, a significant portion of patients with rehabilitative needs are evidently neurodivergent, presenting challenges in any healthcare setting, including rehabilitation. Unfortunately, there are no studies on the impact of neurodivergence in rehabilitation or on inclusive and effective rehabilitation approaches for neurodivergent individuals with rehabilitation needs unrelated to their neurodivergence.

Nevertheless, neurodivergent people may exhibit characteristics that conflict with conventional rehabilitation care, which is typically organized for neurotypical individuals. It is well known that many neurodivergent people have subjective sensory hypersensitivity to non-noicep-

tive sensory stimuli,³ which can lead to feelings of overwhelm triggered by various situations or stimuli, such as pain, bright hospital lights, background noise, smells, and continual changes in personnel and organization, as well as unnecessary (from the patient's perspective) verbal persuasion or physical contact.¹ Physical contact with the physiotherapist may provoke overreactions, so to mitigate this, it is important to avoid unnecessary physical contact and use strategic barriers (such as pillows or towels).

Another issue is the difficulty some neurodivergent patients may have in clearly understanding all the documents provided in clinical settings due to conditions like dyslexia or attention disorders, which may limit the validity of informed consent and the collected questionnaires. This is particularly relevant since most assessments in rehabilitation rely on patient-reported outcome measures.

Additionally, different learning strategies may be necessary for neurodivergent patients. For example, they may need to practice a task or behavior multiple times. Physiotherapists should positively encourage patients, expressing support and providing effective feedback more frequently than usual. Group therapy should be avoided; one-on-one sessions are preferable, especially for patients with attention disorders.

Neurodivergent patients may respond differently to

treatment.¹ In most cases, particularly when a patient does not have a communication disorder and is simply recognized as “atypical” by clinicians, the rehabilitation team may attempt to quickly adopt strategies tailored to the patient’s needs. However, in cases involving severe neurological disorders (*e.g.*, stroke, traumatic brain injury, encephalitis, or brain tumors), the efficacy of rehabilitation interventions may be limited by an unrecognized neurodivergence, necessitating specialized approaches for patients who may react differently from neurotypical individuals.

It is not surprising that studies assessing the success of rehabilitation in severe neurological disorders have identified various factors influencing outcomes, yet they often fail to consider neurodivergence as a condition that could have a different impact on rehabilitation outcomes. In fact, the impact of neurodivergence is frequently underestimated, and there is a noticeable lack of tools to analyze neurodiversity in both adulthood and among the elderly. These tools, likely in the form of questionnaires and tests for hypersensitivity, should better discriminate individual characteristics, given the heterogeneity present in neurodivergent conditions.⁴

We can suppose that a dedicated rehabilitative strategy,

consisting of tailored cognitive and functional training approaches provided in clinical environments designed to minimize hypersensitivity, would be key to better outcomes for neurodivergent patients. Healthcare professionals, including physicians and therapists, would likely benefit from education regarding the sensory, emotional, and cognitive needs of neurodivergent individuals.⁴

We believe that every rehabilitation team member should enhance their awareness of neurodivergence in adults and its heterogeneity, to understand the potential impact this characteristic could have on patient wellbeing.

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Conflicts of interest

The authors certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.

Authors' contributions

All authors read and approved the final version of the manuscript.

Acknowledgements

This paper was partially supported by the Italian Ministry of Health - Ricerca Corrente. The founders had no role in the study design, publication decision, or manuscript preparation.

History

Manuscript accepted: December 4, 2024. - Manuscript received: December 4, 2024.

(Cite this article as: Ferriero G, Ferrario I, Negrini F. Bridging the gap: integrating neurodivergence into rehabilitation plans for adults. *Eur J Phys Rehabil Med* 2024;60:917-8. DOI: 10.23736/S1973-9087.24.08864-6)