



Neuronal regeneration for drug-resistant epilepsy: scoping review

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Introduction. Epilepsy is characterized by abnormal electrical activity in the brain, leading to adverse impacts on quality of life. It affects all population groups and poses a high risk of disability and premature death. Approximately 30% of cases remain uncontrolled despite the appropriate use of at least two antiepileptic drugs (drug-resistant epilepsy). Neuronal regeneration has been proposed as a potential therapeutic alternative for this condition. This project aligns with the United Nations Sustainable Development Goals (SDGs) 3, 10, and 17, as well as Cochrane's Scientific Strategy 2025–2030.

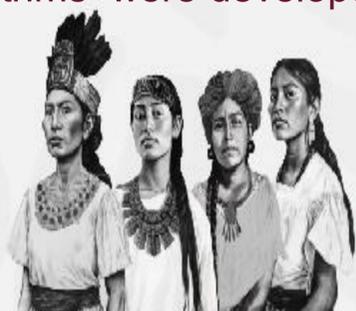
Objective. To evaluate the therapeutic potential of modulating neuronal regeneration in patients with drug-resistant epilepsy.

Methodology. The protocol is published (1), and registered at the National Institute of Rehabilitation Luis Guillermo Ibarra Ibarra (INRLGII). We developed the research questions using predefined models. The main question is: *What is the therapeutic potential of modulating neuronal regeneration pathways in patients with drug-resistant epilepsy according to the available literature?* We used the Right Review tool to determine the most appropriate study type for this question, which indicated a scoping review. Feasibility was verified through searches in PROSPERO, the Open Science Framework, and Epistemonikos, with no relevant results found in those repositories. An experienced researcher designed the search strategy, and another reviewed it following the PRESS guideline. Preliminary search algorithms were developed using 2Dsearch, and the final version was

validated line by line. Databases searched included Web of Science, MEDLINE, Scopus, EBSCOhost, Ovid, and Google Scholar. We will include clinical or preclinical studies on neuronal regeneration interventions in patients of any age with drug-resistant epilepsy. Exclusion criteria include retracted studies, studies that cannot be translated, or those with inaccessible full texts. Two reviewers will independently assess study eligibility using Sysrev, and discrepancies will be resolved by a third reviewer. A "Study Within a Review" (SWAR) is being designed to assess the agreement between screening decisions made by human reviewers and artificial intelligence tools. Data extraction variables will include clinical, demographic, and treatment characteristics, as well as social determinants of health equity. Results will be presented in tables, figures, and graphs, along with a narrative synthesis.

Results. We identified 19,738 studies, removed 13,020 duplicates and 5 retracted studies. A random sample of 50 out of 6,713 studies was selected for a Title/Abstract screening pilot test. We provided a guidance document to assist participants in correctly applying eligibility criteria. We also received feedback from a caregiver with lived experience, whose daughter has epilepsy.

Conclusion. This project aims to generate a comprehensive perspective on the applications of neuronal regeneration in drug-resistant epilepsy, exploring its potential within the central nervous system. Currently, the Title/Abstract screening pilot, the "Study Within a Review", and preparations for final screening are underway.



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References

1. García-González R, Sandoval H, Mishra R, Malvaso A, Alarcon-Ruiz CA, Ríos C, Pérez-Neri I. Mechanisms of nerve regeneration for drug-resistant epilepsy: scoping review protocol. *Archivos de Neurociencias*. 2023;28(4):29-34.