ISSN: 3051-2492

OPEN ACCESS

ReAttach Affect Coach JOURNAL

Research Article

NeuroLog: Symptom-Pattern Logging and Flare-Prediction in Functional Neurological Disorder: Study Protocol (2025)

Steven Painter

Email: steven@neurolog.app

Abstract

NeuroLog is a free, anonymous mobile application developed by individuals with lived experience of Functional Neurological Disorder (FND). The platform provides users with a structured framework to log symptom patterns, emotional states, and potential triggers, facilitating more transparent communication with healthcare professionals and improved clinical decision-making. The application embeds the Symptom Amplification Module (SAM), a measurement framework that quantifies symptom severity, emotional state, trigger exposure, and flare likelihood. This protocol defines the methodology for collecting, anonymising, and analysing user-generated data to detect symptom patterns, cluster and identify flare incidence, and develop predictive models estimating flare risk. In this observational study, no therapeutic interventions are assigned to users. Separate protocols will govern future interventional trials.

Keywords: Functional Neurological Disorder, symptom tracking, biopsychosocial, predictive analytics, patient-led research

Introduction

Functional Neurological Disorder (FND) represents a complex interface between neurology and psychiatry, characterised by genuine neurological symptoms that arise in the absence of structural brain disease [1,2,3,4,5,6]. Despite increasing clinical recognition, FND remains under-researched, frequently misunderstood, and often poorly managed within healthcare systems. For patients with FND, it is of utmost importance to explain the diagnosis in clear, non-blaming terms [1,2]. Patients commonly report frustration with fragmented care pathways, variable diagnostic explanations, and limited access to evidence-based interventions.NeuroLog was developed in direct response to these challenges [7]. Created by an individual living with FND, the platform serves as a smart symptom tracking and research tool designed to capture the lived experience of the disorder in real time. NeuroLog enables users to log daily symptoms, emotional states, and environmental triggers through an adaptive interface that evolves according to user input. This generates a rich dataset of longitudinal, anonymised information that can be analysed to identify symptom patterns, emotional correlations, and flare cycles. The application's dual purpose is both clinical and scientific: it empowers individuals to communicate more effectively with healthcare providers while contributing to large-scale, anonymised datasets for academic research. Through these aggregated insights, NeuroLog seeks to advance the understanding of FND's biopsychosocial dynamics [5], bridging patient experience with data-driven research. As of 2025, NeuroLog has been validated by a leading UK clinician and is used globally by individuals seeking clarity and self-management strategies. The platform's development reflects a growing movement towards patient-led innovation in neuropsychiatric care, demonstrating how technology and lived experience can converge to generate meaningful clinical and research outcomes.

Study Design

Participants

Participants are users who voluntarily engage with the NeuroLog application and consent to anonymised data collection. No identifying personal information is stored or linked to individual logs.

Materials and Measures (Symptom Amplification Module)

The Symptom Amplification Module (SAM) provides a structured scoring framework to quantify symptom severity, emotional state, trigger exposure, and flare likelihood. Users rate symptom intensity on a 1–10 scale, identify relevant triggers, and select emotional states from defined categories. Data entries may include free-text notes providing qualitative context.

Procedure

Users are encouraged to log symptoms regularly, with additional entries during flare events. Data are transmitted securely, encrypted, and stored in compliance with applicable data protection standards. All data analysis is conducted on anonymised, aggregated datasets.

Ethical Considerations

This is an observational study protocol. No therapeutic interventions are assigned. Future interventional research will operate under separate ethics approval and governance arrangements.

Discussion

NeuroLog represents a patient-led innovation that integrates self-report symptom tracking with predictive analytics. The embedded SAM framework [3] provides a novel methodology for quantifying biopsychosocial interactions within FND, offering both clinical utility and research potential. Although reliance on self-reported data presents limitations, the model's iterative learning design and scalability position it as a valuable tool for future clinical collaborations and longitudinal research.

Future Directions

Subsequent studies will explore interventional pilots, such as online emotional regulation coaching and personalised feedback systems. Each future study will be governed by dedicated protocols, ethical review, and co-authorship frameworks. NeuroLog will continue to evolve through collaboration with research institutions to refine predictive accuracy and deepen understanding of FND.

References

1. Lalitha, L. P., Acharya, P. T., Javali, M., Mehta, A., & Rangaiah, P. (2025). Functional Neurological Disorders: A Comprehensive Review. The Journal of the Association of Physicians of India, 73(7), e17–e23. https://doi.org/10.59556/japi.73.1051
2. Hallett, M., Aybek, S., Dworetzky, B.A., McWhirter, L., Staab, J.P., Stone. J. (2022): Functional neurological disorder: new subtypes and shared mechanisms. Lancet Neurol. 21:537-50. 10.1016/S1474-4422(21)00422-1
3. Espay, A. J., Aybek, S., Carson, A., Edwards, M. J., Goldstein, L. H., Hallett, M., LaFaver, K., LaFrance, W. C., Lang, A. E., Nicholson, T., Nielsen, G., & Stone, J. (2018). Current concepts in diagnosis and treatment of functional neurological disorders. JAMA Neurology, 75(9), 1132–1141. https://doi.org/10.1001/jamaneurol.2018.1264
4. Engel, G. L. (1977). The need for a new medical model: A challenge for biomedicine. Science, 196(4286), 129–136. https://doi.org/10.1126/science.847460
5. Kozlowska, K., Palmer, D. M., Brown, K. J., McLean, L., Scher, S., Gevirtz, R., & Williams, L. M. (2020). A developmental, biopsychosocial model for functional neurological disorder. The Lancet Psychiatry, 7(2), 112–124. https://doi.org/10.1016/S2215-0366(19)30356-8
6. Stone, J., & Edwards, M. J. (2011). How "psychogenic" are psychogenic movement disorders? Movement Disorders, 26(10), 1787–1798. https://doi.org/10.1002/mds.23735
7. Painter, S. (2025). Neurolog: symptom-pattern logging and flare-prediction in functional neurological disorder. ReAttach Therapy International Foundation, Wimbledon, UK.