

**Supplementary Material** (available online)

**Appendix S1.** Search terms for PNES.

(PNES[tiab] OR NEAD[tiab] OR nonepileptic convulsion [tw] OR non-epileptic convulsion [tw] OR nonepileptic seizure [tw] OR non-epileptic seizure [tw] OR nonepileptic attack [tw] OR non-epileptic attack [tw] OR nonepileptic spell [tw] OR non-epileptic spell [tw] OR nonepileptic event [tw] OR non-epileptic event [tw] OR psychogenic convulsion [tw] OR psychogenic seizure [tw] OR psychogenic attack [tw] OR psychogenic spell [tw] OR psychogenic event [tw] OR pseudo seizure [tw] OR pseudo-seizure [tw] OR dissociative convulsion [tw] OR dissociative seizure [tw] OR conversion convulsion [tw] OR conversion seizure [tw] OR pseudoepilepsy [tw] OR pseudo-epilepsy [tw] OR pseudoepileptic convulsion [tw] OR pseudoepileptic seizure [tw] OR pseudoepileptic attack [tw] OR pseudoepileptic spell [tw] OR pseudoepileptic event [tw] OR pseudo-epileptic convulsion [tw] OR pseudo-epileptic seizure [tw] OR pseudo-epileptic attack [tw] OR pseudo-epileptic spell [tw] OR pseudo-epileptic event [tw] OR functional neurological disorder [tw] OR functional neurological symptom disorder [tw] OR non-epileptic attack disorder [tw] OR nonepileptic attack disorder [tw] OR nonepileptic convulsions [tw] OR non-epileptic convulsions [tw] OR nonepileptic seizures [tw] OR non-epileptic seizures [tw] OR nonepileptic attacks [tw] OR non-epileptic attacks [tw] OR nonepileptic spells [tw] OR non-epileptic spells [tw] OR nonepileptic events [tw] OR non-epileptic events [tw] OR psychogenic convulsions [tw] OR psychogenic seizures [tw] OR psychogenic attacks [tw] OR psychogenic spells [tw] OR psychogenic events [tw] OR pseudoseizures [tw] OR pseudo-seizures [tw] OR dissociative convulsions [tw] OR dissociative seizures [tw] OR conversion convulsions [tw] OR conversion seizures [tw] OR pseudoepilepsy [tw] OR pseudo-epilepsy [tw] OR pseudoepileptic convulsions [tw] OR pseudoepileptic seizures [tw] OR pseudoepileptic attacks [tw] OR pseudoepileptic spells [tw] OR pseudoepileptic events [tw] OR pseudo-epileptic convulsions [tw] OR pseudo-epileptic seizures [tw] OR pseudo-epileptic attacks [tw] OR pseudo-epileptic spells [tw] OR pseudo-epileptic events [tw] OR functional neurological disorders [tw] OR functional neurological symptom disorders [tw] OR non-epileptic attack disorders [tw] OR nonepileptic attack disorders [tw] OR hysterical seizure [tw] OR hysterical seizures [tw] OR hysteroepilepsy [tw] OR hystero-epilepsy [tw] OR hysterical convulsion [tw] OR hysterical convulsions [tw] OR hysterical attack [tw] OR hysterical attacks [tw] OR hysterical spell [tw] OR hysterical spells [tw] OR hysterical event [tw] OR hysterical events [tw])

**Table S1.** Common medical differential diagnoses to be considered during clinical assessment of PNES.

Differential diagnosis	Differentiation from PNES	Differentiating tests
Epilepsy	Shorter duration Stereotypical semiology Incontinence and injury more common Eyes open Post-ictal confusion If unresponsive, expect amnesia for some part of seizure	EEG Video EEG
Syncope	Very short duration (seconds) Prodromal signs usually present (lightheadedness, pallor, diaphoresis, nausea/ vomiting, tunnel vision) Triggered by changes in position (standing) or specific situations (micturition, blood draws) Can be accompanied by myoclonic jerks No post-event confusion	ECG Holter ECG Tilt table test
Parasomnias	Complex behaviors during sleep (eating, walking, etc) Behaviors are not stereotyped Usually last minutes No or little recollection of the event NREM parasomnias typically start in childhood	PSG or video PSG
Narcolepsy with cataplexy	Excessive daytime sleepiness, sleep attacks, sleep paralysis, hypnagogic hallucinations Cataplexy: sudden transient episodes of loss of tone with preserved consciousness, triggered by strong emotions Onset in childhood or young adulthood	PSG and MSLT
Paroxysmal movement disorders	Can include: dyskinesias, dystonia, myoclonus, ballismus, tics, tremors Preserved consciousness Improvement of movement during sleep Some may be triggered by exercise or sudden movement	Clinical diagnosis Imaging as clinically indicated
Transient ischemic attacks	Usually negative symptoms (weakness, aphasia, numbness) Limb shaking may occur with brief, irregular movements Preserved consciousness Last minutes to hours Cardiovascular risk factors usually present	Brain imaging Carotid ultrasound ECG Echocardiogram Other studies depending on etiology
Migraines	Auras with visual, sensory, and rarely motor/speech symptoms. Some types include auras with dysarthria, vertigo, tinnitus. Headache often unilateral, throbbing, worsens w/exercise, associated with nausea/ vomiting, phono/photophobia. Fully reversible weakness in hemiplegic migraine.	Clinical diagnosis Imaging as clinically indicated
Transient global amnesia	Hours in duration Repetitive questions demonstrating poor recent memory Can carry out complex activities	Imaging as clinically indicated
Vestibular disorder	Severe vertigo Tinnitus Preserved awareness	Vestibular exam
Breath holding spells	In young children (1-3 years old) Brief loss of consciousness No post-event confusion Pallor and cyanosis may be present	Clinical diagnosis
Panic disorder	Peaks in minutes Autonomic symptoms Not associated with loss of consciousness	DSM 5 criteria Developmental history
Dissociative disorder	Depersonalization and/ or derealization Lasts minutes to hours No convulsive activity	DSM 5 criteria Developmental history

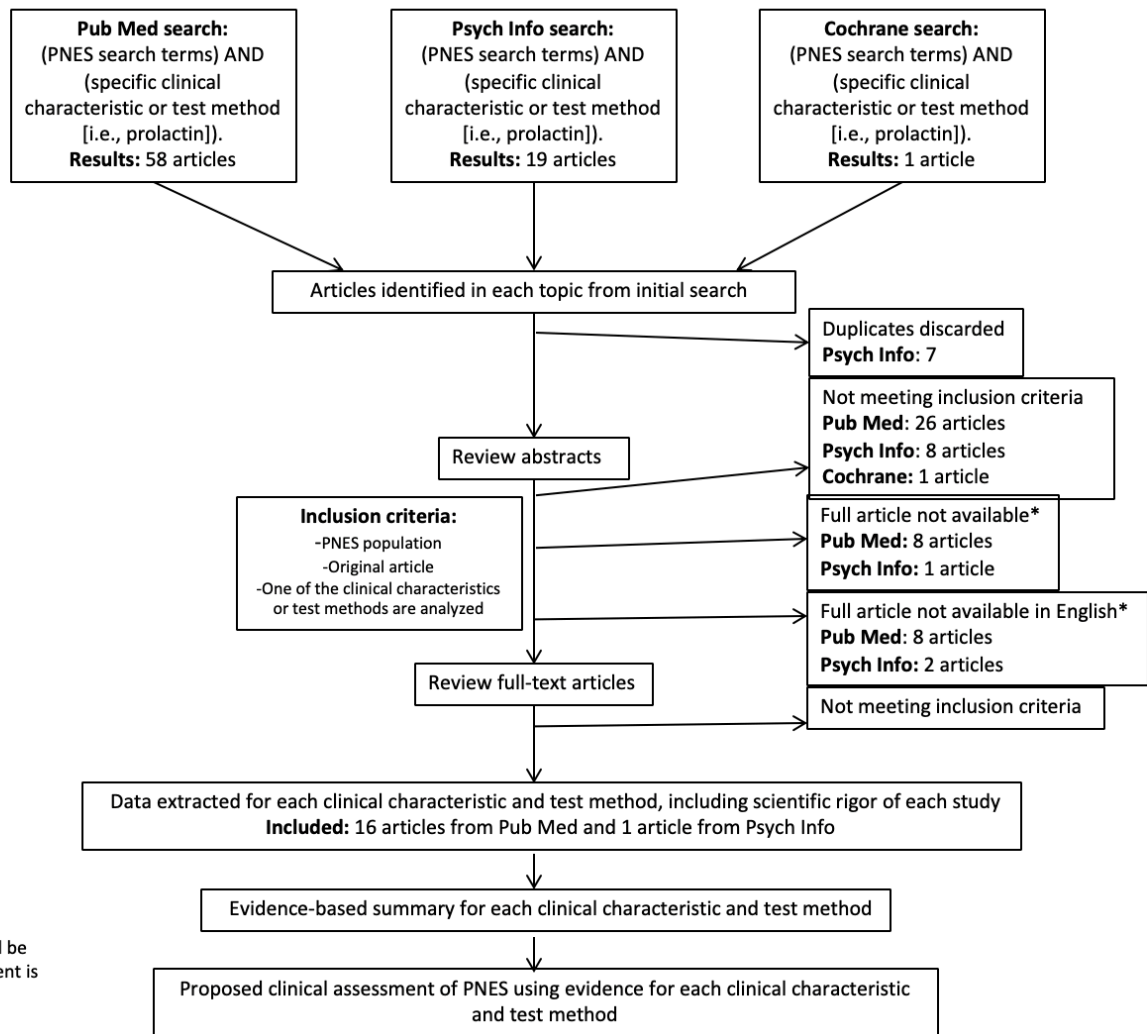
EEG: electroencephalogram; ECG: electrocardiogram; NREM: non rapid eye movement; PSG: polysomnography; MSLT: multiple sleep latency test.

**Table S2.** Example of biopsychosocial (BPS) neuropsychiatric case formulation with predisposing, precipitating and perpetuating (PPP) factors.

	Bio	Psycho	Social
Predisposing factors	Family history of psychiatric disorders, developmental delay, increased resting levels of bodily arousal	Childhood adversity, alexithymia, dissociative tendencies, dysfunctional attachment	Dysfunctional and chaotic upbringing
Precipitating factors	Traumatic brain injury, traumatic or prolonged medical procedures	Recent sexual or psychological trauma	Interpersonal conflicts, unemployment
Perpetuating factors	Chronic medical problems, medication side effects, undertreated pain	Untreated comorbid psychiatric disorders, avoidant behavior, sick identity	Ongoing litigations, ongoing interpersonal conflicts, primary gain in frequent hospital admissions

## Figure S1 Legend

Figure S1. Iterative search process for prolactin level in connection to PNES.



## **Supplementary references included in data extraction (presented per section, ordered alphabetically)**

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### *Diagnostic formulation*

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