



# Survey of physician attitudes towards psychogenic nonepileptic seizures and driving

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## ABSTRACT

**Background:** Physicians from various disciplines encounter patients presenting with psychogenic nonepileptic seizures (PNES) as part of their routine clinical practice. Recommendations towards assessing fitness to drive and reporting are clearer for conditions such as neurocognitive disorders and epilepsy, but such guidelines do not exist for patients with PNES. Here, we assess physicians' attitudes towards driving for patients diagnosed with PNES.

**Methods:** Electronic questionnaires were sent to Neurology and Family Medicine physicians practicing at Creighton University Medical Center and Psychiatry physicians practicing at Creighton-Nebraska Psychiatry Residency Program to assess their opinion regarding driving risk when encountering PNES.

**Results:** The survey request was sent to 125 physicians, of which close to 60% completed the survey. Eighty-eight percent of participants encountered PNES in their clinical practice, and 69.1% agreed it was a difficult problem to assess, with only 8.3% endorsing a belief that these patients should drive without restrictions. Ninety-three percent felt having guidelines would help them assess the driving risk in this population.

**Conclusion:** Psychogenic nonepileptic seizures are common across neurology, psychiatry, and primary care, and most physicians find assessing driving risk in such individuals highly warranted yet difficult. Developing such assessment guidelines and recommendations is of great need for clinicians.

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## 1. Introduction

Psychogenic nonepileptic seizures (PNES) represent a sudden change in an individual's behavior, perception, thinking, or feelings. They are typically time-limited and resemble, or are mistaken for, epilepsy. There are no electroencephalographic (EEG) changes that accompany a true epileptic seizure. Nonepileptic seizures (NES) and “pseudo-seizures” are the other terms used interchangeably with PNES to describe this condition. The exact etiology of PNES is highly debatable and considered a psychological phenomenon.

Epilepsy is found in 0.5–1% of the population. Of these, an estimated 5% to 10% may be PNES in nature [1]. This proportion may be even higher given PNES often hide in recalcitrant epilepsy cases [2]. Psychogenic nonepileptic seizures can greatly affect individuals' quality of life and are associated with high medical, personal, and

societal costs [3–5]. Findings that point towards PNES are high seizure frequency and poor response to antiepileptic drugs. Occurrence at specific times, la belle indifference, and histories of sexual abuse are suggestive. Lack of injury associated with seizures and associated psychiatric diagnoses may also point towards PNES [6]. Clinical signs include emotional triggers, gradual onset and cessation, and “nonphysiologic progression”. Out-of-phase motor activity, intermittent motor activity, dystonic posturing, and pelvic movements are also very significant. Crying during the seizure, avoidance behaviors during the event, and termination or provocation by suggestion are all important diagnostic signs after ruling out all medical causes [6].

Epilepsy is associated with an increased risk of motor vehicle accidents [7]. The United States (US) and several other countries have guidelines to assist physicians in making recommendations regarding driving ability when encountering patients with epilepsy [8]. If epilepsy is controlled, driving is typically possible [7,9]. The particular legal rules for determining and administering driving privileges are a complex and often confusing mix of federal and

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state laws, regulations, and local practices that vary widely. Variations exist with regard to commercial vs. noncommercial driving licenses. Unfortunately, no guidelines exist for PNES in the US. Given PNES' very acute and unpredictable onset, there is significant risk while an individual is operating a vehicle. Some states have provisions to request for a state-assigned physician to assess driving ability in those with psychiatric and medical conditions but not for PNES. The United Kingdom (UK), however, has formal guidelines for physicians in making driving recommendations and assessments for patients with PNES [10].

To address this specific management dilemma, we conducted this survey which assesses physicians' attitudes towards driving and NES. This study, via an electronic survey instrument, aimed to estimate and describe US physicians' attitudes towards patients with PNES and their driving capabilities/freedoms. It also assesses physicians' thoughts on the establishment of driving-related guidelines for patients with PNES.

## 2. Methods

Institutional Review Board (IRB) approval was obtained through Creighton University Medical Centre. Electronic questionnaires were sent to neurologists and family physicians at Creighton University Medical Centre and psychiatrists at Creighton University and University of Nebraska Medical Center. The survey instrument (Table 1), comprised of 8 questions developed based on past research [11,12],

**Table 1**  
Survey instrument.

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- Question 1: What is your medical specialty?
- ☐ Psychiatry
  - ☐ Neurology
  - ☐ Family practice
- Question 2: In what type of practice do you work? (Please choose all that apply)
- ☐ University hospital/clinic
  - ☐ Community mental health center
  - ☐ Private practice
  - ☐ Veterans hospital
  - ☐ State hospital
- Question 3: Have you encountered patients with PNES in your practice?
- ☐ Yes
  - ☐ No
- Question 4: Were you ever in a situation where you had to advise on the driving ability of a patient with PNE?
- ☐ Yes
  - ☐ No
- Question 5: In your opinion, patients diagnosed with PNES:
- ☐ Can drive with no restrictions
  - ☐ Should have the same driving restrictions as patients with epilepsy
  - ☐ Should have driving decisions catered to individual circumstances
- Question 6: Select your level of agreement with the following statement: "Decision-making regarding driving ability of patients with PNES is a difficult problem"
- ☐ Strongly disagree
  - ☐ Disagree
  - ☐ Neutral
  - ☐ Agree
  - ☐ Strongly agree
- Question 7: What are the difficulties associated with driving related recommendations for patient with PNE? (Please choose all that apply)
- ☐ Limited knowledge on how to make driving decisions in this population
  - ☐ Lack of resources to carry out an adequate assessment
  - ☐ Fear of legal implications
  - ☐ Lack of experience making such decisions
- Question 8: Do you agree that future guidelines on assessing driving ability of patients with PNES will be useful?
- ☐ Yes
  - ☐ No
- 

\* Electronic questionnaire sent via Survey Monkey to neurologists and family physicians at Creighton University Medical Center, and Psychiatrists at Creighton University and University of Nebraska Medical Center.

was sent electronically using Survey Monkey. The design was meant to capture the demographics and qualifications of the participants and then assess their practice patterns and attitudes regarding driving abilities of those who have PNES [13,14].

The Survey Monkey link was sent to the individual emails of the residents and faculty in all three departments. Physicians holding a Doctor of Medicine (MD) or Doctor of Osteopathic Medicine (DO) degree were eligible to participate. A total of 3 reminders were sent to maximize the response rate. Confidentiality was maintained throughout the study. A complete case analysis was performed (i.e., only survey participants who responded to all 8 questions in the instrument were included in the study analysis). Data analysis of the survey results was performed using R, with descriptive statistics with exact binomial 95% confidence bounds reported in Table 2.

## 3. Results

A total of 125 physicians received an invitation to participate in the study. Of these, 64 were psychiatrists, 11 were neurologists, and 50 were practicing family medicine. A response rate of 57.6% was achieved ( $n = 72$ ). Psychiatry had the highest response rate (75%), followed by neurology (63%) and family medicine (32%). Table 2 shows the descriptive statistics of the survey results. Of responders, 88.9% endorsed encountering PNES in their clinical practice, and 38.9% reported being asked to make a recommendation regarding driving at some point. Very few, 8.3%, felt there should not be any driving restrictions for patients with PNES. Of responders, 45.8% felt patients diagnosed with PNES should have the same driving restrictions placed upon them as patients with epilepsy while 45.8% felt it should be left to individual circumstance. Most physicians (69.4%) felt assessing driving risk to be a problem in this population, and only 18% of physicians felt confident with their assessment. Approximately 61.1% reported having limited knowledge on how to assess and make driving decisions in this population, with 55.6% reported having a limited experience in making this decision. A total of 48.6% of respondents reported lack of resources to make proper assessment, with 47.2% fearing legal implications around this decision-making. In our survey, 93.1% of respondents endorsed that guidelines on assessing driving ability of patients with PNES would be very helpful.

## 4. Discussion

Psychogenic nonepileptic seizures are a complicated disorder with poor prognosis, and there is limited evidence regarding treatment recommendations and management. Clinical differentiation between epilepsy and PNES is difficult, with organic workup and video-EEG being the gold standard in ruling out epilepsy and establishing a diagnosis of PNES. To make matters worse, epilepsy and PNES tend to occur simultaneously in up to 30% of cases [15]. Based on existing literature, our goals in the treatment of PNES should be an improvement in frequency of acute events and long-term remediation [16–18]. Majority of physicians believe that the treatment of choice for PNES should be psychotherapy [18], particularly cognitive behavioral therapy [19,20]. Although pharmacological agents are less effective [21], they may have a role when psychiatric comorbidities (anxiety, affective conditions) are present [22].

In most cases, by the time a clinician begins to suspect a diagnosis of PNES, the affected individual would have had several attacks. Time to diagnosis at referral epilepsy centers has been reported to take as long as 7–10 years [23]. Following diagnosis, the question of eligibility for driver licenses arises. As Morrison and Razvi have reported, guidelines in the UK allow for issuance of driver licenses for individuals with PNES but only on confirmation by clinicians that their "behavioral disturbances" have been "satisfactorily controlled [10]." A physician faced with the question of satisfactory control of PNES in a patient would benefit from a set of predetermined criteria. These are

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