

Frequency of Psychogenic Non Epileptic Seizures in Patients Presenting in the Department of Neurology, Jinnah Postgraduate Medical Centre, Karachi

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Abstract: Psychogenic non-epileptic seizures (PNES) are clinical events that resemble epileptic seizures but lack the characteristic electrical discharges associated with epilepsy. Often underdiagnosed, PNES are frequently associated with psychological stressors and psychiatric comorbidities. In Pakistan, limited data exists on the frequency and associated factors of PNES in neurological settings. **Objective:** To determine the frequency of psychogenic non-epileptic seizures among patients presenting to the Department of Neurology at Jinnah Postgraduate Medical Centre (JPMC), Karachi, and to identify associated psychiatric comorbidities. **Methods:** This descriptive cross-sectional study was conducted at Ward 28, Department of Neurology, JPMC, Karachi, from January 13, 2025, to April 13, 2025, following ethical approval from the Institutional Review Board. A total of 151 patients aged between 12 and 60 years, of both genders, who presented with clinical features suggestive of PNES were recruited using non-probability consecutive sampling. Detailed psychiatric histories were recorded. Data were analyzed using SPSS; associations between PNES and psychiatric variables were assessed using Chi-square tests with a significance threshold of $p < 0.05$. **Results:** Out of 151 patients, PNES were confirmed in 79 individuals (51%). A significant proportion reported psychiatric comorbidities: 49.6% had post-traumatic stress, 50.3% had depression, 58.2% reported anxiety, 39% had a history of suicide attempts, and 54% were smokers. Stratified analysis revealed significant associations between PNES and anxiety ($p = 0.008$) as well as suicide attempts ($p = 0.036$), whereas depression and PTSD did not show statistically significant relationships. **Conclusion:** PNES were observed in over half of the study population, with strong associations identified between PNES and psychiatric conditions such as anxiety and prior suicide attempts. These findings emphasize the importance of psychiatric evaluation in patients presenting with seizure-like episodes and highlight the need for interdisciplinary management strategies.

Keywords: psychogenic non-epileptic seizures, mental condition, seizures, stress

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Introduction

Psychogenic non-epileptic seizures (PNES) imitate epileptic seizure symptoms yet detect no electrical brain signals which are characteristic of epilepsy (1). The neuropsychiatric condition known as PNES requires multi-specialty assessments to diagnose and treat patients because both evaluation and treatment present substantial obstacles (2). The worldwide prevalence rates of PNES cover a broad range between 2 and 33 seizure cases per 100,000 people annually (3). Jawaid et al. (2020) ran research in Pakistan which confirmed that PNES diagnosis affected 50.4% of patients experiencing seizure-like symptoms (4). The substantial number of registered cases with PNES requires improved diagnosis and prevention strategies throughout Pakistan because mental disorders display limited recognition within this setting (5). Most PNES cases connect with current psychiatric diseases as well as existing post-traumatic stress disorder (PTSD) and experiences of physical or emotional abuse. Research shows PNES patients have psychiatric disorders at a frequency between 70% and 90% (6). The research shows that PNES patients face higher rates of adverse childhood experiences and psychosocial stressors than the general population (7). Medically, PNES causes difficulties in diagnosis when doctors must differentiate it from epileptic seizures because the symptoms overlap with generalized convulsions, altered levels of consciousness, and periods of unresponsiveness (8). PNES episodes include long-lasting duration, irregular limb movement patterns, and unsuccessful responses to antiepileptic pharmaceutical agents (9). Video electroencephalography (10) monitoring is the definitive diagnostic tool to differentiate PNES from epileptic seizures because such monitoring demonstrates no

epileptiform signals during events (11). Research focusing on PNES at the Jinnah Postgraduate Medical Centre (JPMC) in Karachi remains scarce within Pakistan throughout existing literature. JPMC's large patient flow and broad patient makeup permit researchers to assess the prevalence and clinical characteristics of PNES cases. The research seeks to fill existing gaps in knowledge through extensive assessment of PNES prevalence along with associated factors in under resourced healthcare settings. A better understanding of demographic elements plus psychiatric and clinical risk indicators will help improve accurate PNES diagnoses and personalized treatment approaches in Pakistan as well as other analogous settings. The present research aims to determine the frequency of psychogenic non epileptic seizures in patients presenting in department of neurology, Jinnah Postgraduate Medical Centre.

Methodology

After ethical approval from the institutional review board, this cross-sectional study was conducted at Ward 28, Department of Neurology, Jinnah Postgraduate Medical Centre (JPMC) Karachi, from 13-January 2025 to 13-April 2025. Through non-probability consecutive sampling, 151 patients aged 12-60 years, both genders, presenting with clinical symptoms of psychogenic non epileptic seizures were included in the present study. Patients with a suspected diagnosis of clear panic attacks and who are not willing to participate in the study were excluded from the present study. Written informed consent for the study was obtained from the patient who fulfilled the inclusion criteria. Detailed demographic details of each patient, including name, gender, age, educational status, marital status, and employment status, were obtained. Each patient was



inquired about history of psychiatric conditions such as post-traumatic stress, depression, anxiety, suicide attempt, smoking or alcoholism. All these psychiatric conditions were confirmed with patient's previous medical history. Each patient was inquired about current sign and symptoms including convulsive-type seizures that are over 10 minutes long, convulsive-type seizures with retained awareness, rapid side-to-side head movements, out-of-phase limb movements, eyes-closed unresponsiveness, pelvic thrusting and changing patterns of movement. Each patient was advised to record a video of the seizure episode at home and then visit the OPD for follow-up. EEG of each patient was performed for confirming diagnosis of psychogenic non epileptic seizures. All results were collected and filled in proforma accordingly by the researcher. After collection of data the analyses was conducted by using Statistical Package for Social Science (SPSS) software, Version 25. Mean and standard deviation was calculated for quantitative variables like age (years), duration of symptoms (days), frequency of seizure (per month) and time of seizure (minute). Frequency and percentages was calculated for categorical variables like gender, age in groups, educational status, marital status, employment status, psychiatric history (post-traumatic stress, depression, anxiety, suicide attempt, smoking or alcoholism), sign and symptoms (convulsive-type seizures that are over 10 minutes long, convulsive-type seizures with retained awareness, rapid side-to-side head movements, out-of-phase limb movements, eyes-closed unresponsiveness, pelvic thrusting and changing patterns of movement) and outcome. Effect modifiers like gender, age in groups, educational status, marital status, employment status and psychiatric history (post-traumatic stress, depression, anxiety, suicide attempt, smoking or alcoholism) were controlled by stratification. Post-stratification chi-square test was applied by taking p value ≤ 0.05 as significant.

Results

The demographic analysis of the study participants ($n=151$) revealed that the mean age was 35.8 ± 13.9 years. Gender distribution showed that 48.3% (73) were female, while 51.6% (78) were male. Regarding marital status, 35% (53) were single, 32% (49) were married, and 32% (49) were widowed. Educational attainment varied, with 22.5% (34) being illiterate, 10.5% (16) having completed primary education, 13.9% (21) matriculation, 15.8% (24) intermediate, 14.5% (22) graduation, and 23.1% (35) post-graduation. Employment data revealed that 30.4% (46) were students, 14.5% (22) were housewives, 25.8% (39) were employed, and 29% (44) were unemployed.

Psychiatric history showed a significant prevalence of mental health issues among participants, with 49.6% (75) reporting post-traumatic stress, 50.3% (76) depression, 58.2% (88) anxiety, 39% (59) a history of suicide attempts, and 54% (81) smoking.

The clinical signs and symptoms highlighted that the average duration of symptoms was 174.8 ± 101.2 days, with a mean seizure frequency of 15.1 ± 8.4 episodes per month and an average seizure duration of 28.3 ± 16.08

minutes. Specific symptom analysis showed that 51.6% (78) experienced convulsive seizures lasting more than 10 minutes, while 56.9% (86) had convulsive seizures with retained awareness. Additional symptoms included rapid side-to-side head movements in 50.3% (76), out-of-phase limb movements in 42.3% (64), eyes-closed unresponsiveness in 53.6% (81), pelvic thrusting in 52.9% (80), and changing patterns of movement in 49% (74). Overall, psychogenic non-epileptic seizures were observed in 51% (79) of participants.

Stratification analysis revealed that anxiety ($p = 0.008$) and a history of suicide attempts ($p = 0.036$) were significantly associated with psychogenic non-epileptic seizures. Other factors, including age, gender, marital status, educational status, employment status, post-traumatic stress, depression, and smoking, did not show statistically significant associations with the occurrence of PNES ($p > 0.05$).

Table 1: Demographic Variables

Variables	Mean and Frequency (n=151)
Age (years)	35.8±13.9
Gender	
Female	73 (48.3%)
Male	78 (51.6%)
Marital Status	
Single	53 (35%)
Married	49 (32%)
Widowed	49 (32%)
Educational status	
Illiterate	34 (22.5%)
Primary	16 (10.5%)
Matriculation	21 (13.9%)
Intermediate	24 (15.8%)
Graduation	22 (14.5%)
Post Graduation	35 (23.1%)
Employment Status	
Student	46 (30.4%)
Housewife	22 (14.5%)
Employed	39 (25.8%)
Unemployed	44 (29%)

Table 2: Psychiatric History

Variables	Frequency (%)
Post-Traumatic Stress	75 (49.6%)
Depression	76 (50.3%)
Anxiety	88 (58.2%)
Suicide Attempt	59 (39%)
Smoking	81 (54%)

Table 3: Sign & Symptoms

Variables	Mean and Frequency
Duration of Symptoms (Days)	174.8±101.2
Frequency of Seizure (per month)	15.1±8.4
Time of Seizure (minute)	28.316.08
Convulsive-type seizures >10 minutes	78 (51.6%)
Convulsive-type seizures with retained awareness	86 (56.9%)
Rapid side-to-side head movements	76 (50.3%)
Out-of-phase limb movements	64 (42.3%)
Eyes-closed unresponsiveness	81 (53.6%)
Pelvic thrusting	80 (52.9%)
Changing patterns of movement	74 (49.0%)
Psychogenic Non Epileptic Seizures	79 (51%)

Table 4: Stratification of effect modifiers

Variables	Psychogenic Non Epileptic Seizures		P Value
	Yes	No	
Age			0.792
< 35 years	39	34	
> 35 years	40	38	
Gender			0.214
Female	42	31	
Male	37	41	
Marital Status			0.246
Single	29	24	
Married	21	28	
Widowed	29	20	
Educational status			0.82
Illiterate	16	18	
Primary	7	9	
Matriculation	11	10	
Intermediate	12	12	
Graduation	14	8	
Post-Graduation	19	16	0.541
Employment Status			
Student	22	24	
Housewife	15	7	
Employed	18	21	
Unemployed	24	20	0.466
Post-Traumatic Stress			
Yes	37	38	
No	42	34	0.938
Depression			
Yes	40	36	
No	39	36	0.008
Anxiety			
Yes	38	50	
No	41	22	0.036
Suicide Attempt			
Yes	25	34	
NO	54	38	0.437
Smoking			
Yes	40	41	
No	39	40	

Discussion

This study reveals important population data about the demographic makeup of patients with psychogenic non-epileptic seizures (PNES) in this care environment. Previous scientific studies indicate PNES affects young to middle-aged adults similarly to the 35.8 ± 13.9 years mean age sample within this research (12). International studies show PNES occurs primarily in females yet our study reveals PNES affects more males (51.6%) than females (48.3%) (13). According to Keskin et al. (2023) global PNES cases demonstrate higher prevalence among women because of differences between genders in both psychiatric susceptibilities and their approach to seeking help (14). The range of marital conditions and educational levels found interesting alignments to social variables. The high numbers of widowed (32%) and single (35%) participants suggest a possible relationship between PNES and social separation since past research pointed to adverse psychosocial elements (15). Educational attainment differed between study subjects, particularly regarding the

high percentage (22.5%) of illiterate participants that might contribute to delayed PNES detection and management (16). The marked evenness in employment types proves similar to existing sociodemographic PNES patient distribution patterns (17). According to the psychiatric records PNES consistently joins mental health disorder profiles in clinical reports. Results agree with Lazzari et al. (2024) who observed psychiatric comorbidities and particularly anxiety and trauma-related disorders as key PNES-contributors because nearly half (49.6%) of patients exhibited PTSD symptoms alongside high rates of anxiety (58.2%) and depression (50.3%) (18). The strong relationship between PNES and anxiety ($p=0.008$) and suicide attempts ($p=0.036$) supports the research evidence on these critical risk factors (19). The observed clinical features with their extended seizure duration and specific motor patterns confirm previous research that reveals PNES seizures extend beyond those of epileptic seizures (20). The diagnosis accuracy together with intervention development for PNES patients demands thorough psychiatric and neurologic assessments. Ongoing research about PNES treatment in

resource-constrained areas demonstrates that neurology clinics need to combine mental health services for effective PNES management.

Conclusion

This investigation reveals a substantial prevalence of PNES in diverse patient populations and shows that psychiatric conditions including anxiety and suicide attempts affect the condition strongly. The results demonstrate why early diagnosis means patients need multiple treatments together with mental health assistance programs at neurology clinics for improved results. Evidence-based psychosocial treatment approaches need implementation in Pakistani communities which have limited resources available.

Declarations

Data Availability statement

All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department concerned. (IRBEC-JPMC-24)

Consent for publication

Approved

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Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

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N (PG Trainee)

Conception of Study, Development of Research Methodology Design,

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All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

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