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## Report on a psychoeducational intervention for psychogenic non-epileptic seizures in Argentina

Mercedes Sarudiansky<sup>1,2</sup>; Guido Pablo Korman<sup>1,2</sup>; Alejandra Inés Lanzillotti<sup>1,2</sup>;  
María Marta Areco Pico<sup>1,2</sup>; Cristina Tenreyro<sup>2</sup>; Gabriela Valdez Paolasini<sup>2</sup>;  
Camila Wolfzun<sup>2</sup>; Silvia Kochen<sup>4</sup>; Luciana D'Alessio<sup>5</sup>; Lorna Myers<sup>6</sup>

<sup>1</sup> CAEA, CONICET, Buenos Aires, Argentina

<sup>2</sup> Facultad de Psicología, Universidad de Buenos Aires, Argentina

<sup>3</sup> Mental Health Center, Ramos Mejía Hospital, Buenos Aires, Argentina

<sup>4</sup> ENyS, CONICET, Buenos Aires, Argentina

<sup>5</sup> IBCN, CONICET, Buenos Aires, Argentina

<sup>6</sup> Northeast Regional Epilepsy Group

Address correspondence and reprint requests to:

msarudiansky@conicet.gov.ar

### Highlights

- Group psychoeducation in Argentina included patients with PNES and caregivers
- Psychoeducation could have a positive impact in patients with PNES in Argentina
- Patients who participated in the group reported improved emotional functioning
- “Group” and “psychoeducational” modality was rated as positive by most participants

### Abstract

#### Purpose:

To examine the effects of a three-session psychoeducational intervention on patients diagnosed with psychogenic non-epileptic seizures (PNES) in an Argentinian public hospital. It was hypothesized that patients would experience improvements in their understanding of PNES, illness perception and affective scores, but might not necessarily experience a significant change in post-traumatic and dissociative symptoms and in seizure frequency.

**Methods:**

This study included 12 patients (10 women, 2 men) who were invited to participate in a psychoeducational group after receiving a V-EEG confirmed diagnosis of PNES. The group consisted of 3 sessions lasting 2 hours each. Pre and post measures included Psychoeducational Intervention Questionnaire, State-Trait Anxiety Inventory, Beck Depression Inventory-II, Brief Illness Perception Questionnaire, Posttraumatic Stress Disorder Diagnostic Scale 5, Dissociative Experiences Scale (DES-M).

**Results:**

This psychoeducational intervention produced results that were similar to interventions reported in US and European studies with regard to changes on psychological measures. Moreover, many patients also reported (on the final day of the intervention) a decrease in seizure frequency. All patients reported that participating in the intervention was a positive experience. Also, all but one patient referred that the participation in the group would have a positive impact on their quality of life.

**Conclusions:**

Psychoeducational interventions appear to have had positive results in Argentinian patients with PNES. This is initial step in the design of empirically based psychoeducational/supportive initiatives for patients in South America.

**Keywords:** psychogenic non-epileptic seizures, psychoeducation, treatment, Hispanic, group treatment, outcome

## Introduction

Psychogenic non-epileptic seizures (PNES) are sudden and involuntary episodic events, which cause an alteration in normal functioning and a reduction in self-control; they are associated with motor, sensory, mental or autonomic manifestations (1,2). Although they are similar to epileptic seizures, they are not caused by epileptogenic activity in the brain. PNES are categorized as functional neurological disorders (FND)/conversion disorders within the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) (3).

Comorbidity with other mental disorders is frequent in patients with PNES, especially anxiety and depressive disorders (4,5). Also, a substantial number of patients with PNES had reported exposure to psychologically traumatic events (6). Psychological trauma is considered an important predisposing factor in PNES, which is consistent with a high rate of comorbid post-traumatic stress disorder (PTSD) (7–9).

Psychotherapy is the treatment of choice for patients with PNES (10). Different approaches have so far been utilized, including cognitive-behavioral therapy (CBT) (11–14), psychodynamic interpersonal psychotherapy (PIT) (15), and third wave approaches (16).

Group therapy approaches are an effective treatment modality for a variety of psychiatric conditions. The experience of "universality" (recognition that there are others who have similar problems and one is not alone) as well as the opportunity for interpersonal learning and healthy imitative behavior that can take place in a group setting are factors that can produce positive treatment outcomes (17).

(Psycho)educational interventions integrate didactic information about a target health condition and rely on diverse treatment approaches. Emotional and motivational factors associated to that illness are targeted. The goal is to improve the patients' coping and management of the illness and often to increase treatment adherence. Psychoeducation can be adapted for individuals or groups, can be tailored for each patient or manualized, and can target a variety of medical or psychiatric conditions (18). Also, it is integrated as an essential component in many models of psychotherapy, including CBT (19) and PIT (20).

Psychoeducational group interventions are particularly appealing because they can be an efficient way of administering treatment to several patients in a single session, and can be administered by different types of health professionals.

There have been a handful of uncontrolled and controlled studies of group psychoeducational interventions for psychogenic non-epileptic seizures (PNES). Reduction in seizure frequency has been variable from one study to another. An early uncontrolled psychoeducational intervention by Zaroff et. al. (21) with 7 patients over ten weekly hour-long sessions included education about PNES, anxiety, depression, trauma, anger and a discussion on healthy behaviors. This group intervention resulted in significant decreases in posttraumatic and dissociative symptoms and emotionally-based coping mechanisms along with a trend toward improved quality of life. However, no significant change in episode frequency was observed; this may partly have been because 3/7 had ceased having psychogenic episodes before the intervention began. Chen et al (22) conducted a randomized controlled trial that compared 1) an intervention group (n=34) consisting of 3 monthly psychoeducational meetings to 2) a routine follow-up control group (n=30). The intervention group received information about PNES, safety and universality in session 1; information on how physical symptoms can arise from underlying emotional causes in session 2; and in session 3 patients were empowered to take control using distress tolerance techniques, relaxation exercises, and allotting time for naps. When patients were prospectively followed-up (3 and 6 months intervals), no significant change in episode frequency/intensity was noted though there was a significant improvement on work and social adjustment and a trend toward decreased emergency department visits or hospitalizations in the intervention group.

Mayor et al (23) provided 20 participants with a four-session manualized psycho-education. Of the 13 participants who completed the treatment, at 7 months, 4/13 of patients had achieved complete episode freedom and 3/13 reported >50% reduction in episode frequency.

Cope et al (24) developed a 3-session cognitive-behavior therapy-informed psychoeducation group for patients who carried a diagnosis of PNES with and without comorbid epilepsy. Pre-post treatment data of 19 patients revealed a significant decrease of seizure frequency, improvements in psychological distress, illness beliefs and understanding of the condition. Additionally, Sharpe

et al (2011) described a psychoeducational model for FND in which guided self-help (GSH) was added to the usual treatment of patients with FND. GSH consisted of a CBT-based self-help workbook and face-to-face guidance sessions. The results reported significant improvements at 3 and 6 months in presenting symptoms, satisfaction with care and physical function, among other measures.

The objective of the present study was to examine the effects of a three-session group psychoeducational intervention in patients diagnosed with PNES in an Argentinian public hospital. It was hypothesized that patients would experience improvements in their understanding of PNES, illness perception and affective scores, but might not necessarily experience a significant change in post-traumatic and dissociative symptoms and in seizure frequency because the intervention was brief and not focused on that type of symptomatology.

## **Methods**

This is a longitudinal non-randomized study that included the administration of pre and post assessment measures.

### *Recruitment Process*

An intentional non-probabilistic sampling design was used. The sample included patients who had been admitted to the video-electroencephalograph (V-EEG) units at the Epilepsy Center at the Ramos Mejía General Hospital and the Neurosciences Service at the Hospital "El Cruce - Dr. Néstor Carlos Kirchner." All patients included underwent videoelectroencephalographic (V-EEG) evaluations to confirm the PNES diagnosis. Neuropsychological and psychiatric assessments were performed during a five-day video-EEG monitoring inpatient stay by professionals (psychiatrists and neuropsychologists) who were blind to the seizure diagnosis. An extensive trauma history was obtained during the psychiatric interview.

### *Inclusion and exclusion criteria*

Patients were included after PNES was confirmed through VEEG testing, psychiatric and neuropsychological testing was completed and the patient had

signed the informed consent. Patients were excluded for the following reasons: not having undergone all the necessary diagnostic steps to determine the nature of their seizures, it was determined they were experiencing paroxysmal events of a medical nature, their intellectual quotient was  $< 70$  according to Weschler Intelligence Scale (25), psychotic symptoms were present at the time of enrollment, or they declined to participate.

### *Participants*

A total of 48 patients were identified as potential subjects for this three-session psychoeducational group format but only 29 could be contacted because the contact information provided while in the hospital had since changed. Eventually, 16 agreed to attend the group and only 12 patients completed all three sessions and could be included in the final analyses (See Figure 1 for a complete explanation of the flow of patients). Scheduling and transportation issues were cited as reasons for discontinuing but these patients expressed interest in being contacted for future interventions. Clinical and socio-demographical characteristics of participants are listed in Table 1.

### *Measures*

All measures listed below were administered prior to the first psychoeducational meeting and after the third and last session had ended.

1. Pre-Post Psychoeducational Intervention Questionnaire: This is an *ad hoc* self-report form that includes 11 questions (some open-ended) and queries on a) seizure frequency in the past two weeks, b) understanding of the PNES diagnosis; c) identification of episode's precipitants; d) how PNES interferes with daily life and to what extent the patient feels she/he can control the episodes; e) anxiety and fear associated to PNES episodes; f) utilization of emergency medical services; and g) whether mental health professionals were consulted in the prior two weeks. In the post-intervention version, a question regarding the patients' perception of changes in their PNES in the last 2 weeks was added; and six additional questions were included that provided information

on the patients' experience of the psychoeducational intervention itself. These questions are shown in tables 2 and 4 of the Results section.

2. *The State-Trait Anxiety Inventory (26,27)*. This self-report instrument includes 40 items that measure state anxiety –which is considered temporary and induced by a specific situation -, and trait anxiety -anxiety as a personal characteristic-. Cronbach alpha coefficients ranged from .92 to .90 for the State Anxiety scale, and .92 to .88 for the STAI Trait Anxiety scale (28). The response to each item is based on a Likert type scale, ranging from 1 = Almost never to 4 = Almost always.

3. *Beck Depression Inventory - Second Edition (BDI-II) (29,30)*. It is a 21-item self-report multiple-choice measure that assesses depressive symptomatology in individuals ranging in age from 13 to 80 years. Internal consistency for the BDI-II ranges from .73 to .92 with a mean of .86. Scores are interpreted in the following manner: minimal (0-13), mild (14-19), moderate (20-28), severe (29-63).

4. *Brief Illness Perception Questionnaire (B-IPQ) (31)*. This self-report instrument assesses the illness perception held by the respondent. It is composed of eight quantitative items that can be responded from 0 to 10, and one item which assess causality hypothesis about illness with an open-ended question. Higher scores on the quantitative items reflect a less healthy perception of the illness, across two dimensions: Cognitive and Emotional.

5. *Dissociative Experiences Scale (DES-M) (32,33)*. This is an 18-item, self-report instrument, with a 5-point Likert-type response scale (1 = *Never or almost never* to 5 = *Always or almost always*) that assesses three dimensions of dissociative experiences in adults: “Amnesia”, “Absorption-Imagination”, and “Depersonalization-Derealization”.

6. *Posttraumatic Stress Disorder Diagnostic Scale (PDS-5) (34)*. This 24-item instrument is used to measure severity of PTSD symptoms over the last month in accordance with DSM-5 criteria. It is rated as it relates to a single identified traumatic event. Items associated to symptoms are classified on a response scale (0 = *Never* to 4 = *Almost always*).

## *Procedures*



Patients were invited either in person, while they were in the hospital just after receiving their diagnosis, or on the phone, soon after being discharged, to participate in a psychoeducational, three-session program on PNES. They received an explanation about the workshop's objectives, a description of topics, general information (e.g. duration, frequency, days and times). All patients were encouraged to attend the group with a relative or close friend and all attended at least one meeting with a companion.

There were four cohorts, two in 2017, one in 2018 and one in 2019. The number of patients who completed all required steps were distributed as such: first cohort (3), second cohort (2), third cohort (6) and fourth (1).

The psychoeducational intervention took place over three bi-monthly sessions, each lasting two hours. All groups were managed by psychologists with training in cognitive behavioral psychotherapy and PNES (GK, CT, AIL, GVP and MMAP). Scheduling and location of each meeting was dependent on the availability of actual space in the Hospital "J. M. Ramos Mejía". On the day of the first and last meeting, additional time was set aside for patients to be able to complete the psychometric instruments mentioned above. All patients signed an informed consent to participate in this study. This investigation was approved by the Ethics Committee of the Ramos Mejía Hospital. A description of the intervention and session structure is summarized in Figure 2.

### *Analysis*

#### Statistical analysis

Our analysis is based on 12 participants. Descriptive statistical analyses were conducted on the collected variables. Due to the small sample size, the Wilcoxon Signed Range Test (non-parametric) was used to analyze the existence of statistically significant differences in pre- and post- inventories and scales. A  $<.05$  level of significance was established.

#### Qualitative analysis

A descriptive thematic analysis of qualitative data gathered as part of the Pre-Post Psychoeducational Intervention Questionnaire was carried out. Open-ended responses were categorized into themes by two independent researchers (MS and CW). In a second instance, these categories were

discussed with the rest of the research team. Illustrative quotations are included in the result section, in brackets.

## **Results**

### **1. Quantitative results**

#### *1a. The patient's experience and perception of PNES*

A reduction in seizure frequency was noted on the post-intervention assessment in the patient group as a whole. However, it should be noted that a case by case examination revealed that 5 patients reported a decline in seizure frequency, 2 remained the same and another 5 reported an increase in frequency. A large percentage of patients also reported having a better understanding of their PNES and its causes (91.7%), and reported being able to identify triggers (75%), in particular emotional and conflict-related precipitants. See Table 2 for detailed results regarding experience and perception of PNES before and after the psychoeducational intervention.

#### *1.b Psychological measures*

A statistically significant difference was noted between pre and post-intervention measures on levels of state-anxiety, but not on levels of trait anxiety. Furthermore, a significant reduction in post intervention depressive symptomatology was noted. Global perception of illness also revealed statistically significant differences between pre and post intervention measures. No statistically significant differences were found on levels of PTSD or dissociative symptomatology. Results are detailed in Table 3.

### **2. Qualitative results**

#### *2.1. Concern and management of PNES*

Initially, 5 out of 12 participants reported concern over how others would respond to witnessing their PNES (e.g. "being taken by someone I don't know [during a seizure], feeling ashamed"). After intervention, none expressed concern about this topic.

When asked about strategies to manage and control their psychogenic episodes, after completing the workshop, half of them reported incorporating

some of the skills that had been taught, including muscle relaxation and breathing exercises (e.g. “I count numbers, listen to music, and I learnt in the workshop how to breathe putting my hands on my stomach, and counting to 10”). They also reported continuing to use other strategies that they had been implementing before attending the group (e.g. participating in pleasurable activities, cognitive distraction).

With regard to emergency room (ER) visits, 2 patients reported going to the ER for PNES related reasons before the workshop, while none reported going to the ER for PNES related reasons after.

### *2.2. PNES attributions*

With regard to causal attributions, no major differences were noted as a whole between pre and post measures. Initially, most patients (9) had mentioned psychosocial causes (e.g. violence, abuse) as precursors to their PNES. Only one patient shifted her causal attribution from a biological attribution (menstruation) to a psychosocial one (“keeping emotions suppressed” and “fear of being silenced”).

### *2.3. Workshop experience and patient feedback*

With regard to the patients’ experience in the workshop itself, all patients reported that it was a positive experience. Also, all but one patient referred that the participation in the group would have a positive impact on their quality of life (Table 4).

Specifically, the most useful aspects reported were: the possibility of sharing the experience with others (n=6), learning new strategies to cope with PNES, such as, relaxation exercises (n= 5), and gaining knowledge about PNES (n=2).

Patients suggested the following recommendations for future psychoeducational workshops: workshops of longer duration, provision of different times for meetings, and a wider range of in-session topics.

## **Discussion**

To our knowledge, this is the first report on the utility of a psychoeducational intervention for South American, adult patients diagnosed with PNES.

With regard to PNES frequency, in general terms, a decline was reported after the intervention in some cases. Specifically, 5 patients reported a reduction in seizure frequency which resulted in nearly a 70% decline in event frequency. Nevertheless, 5 other patients reported an increase in PNES frequency. Previous studies of psychoeducational interventions also reported variable results with regard to seizure frequency. Some have reported no significant differences (21,22,35). Others, on the other hand, have mentioned significant reductions in their patients (23,24,36). Possibly, these differences are due to variations in the patients' reports (e.g. greater chronicity or markedly different frequencies prior to attending the intervention) but this goes beyond the scope of this study. Nevertheless, some studies have underscored that the reduction in seizure frequency is not necessarily the main objective of those interventions since this is not always associated to measures of wellbeing (22).

In the present intervention, nearly all patients reported a greater understanding of their PNES after completing the program, which is not unexpected given the psychoeducational nature of the intervention. However, this is notable considering that other psychoeducational interventions have not necessarily resulted in this type of change (22). An increase in knowledge and understanding of the diagnosis is considered important because it can assist the patient in following through with treatment recommendations in the future.

Furthermore, many participants reported that they were able to identify their PNES triggers after completing the group intervention. This point is highly relevant since triggers tend to be associated with dysfunctional behaviors and stress coping strategies (e.g. avoidance, hyper-reactivity), which can then become perpetuating factors of PNES. With this in mind, future studies should also assess patients' attitudes as they relate to these triggers, much like Chen et al. (22) did in their study.

As for psychological measures, in the present study, we observed a reduction in state-anxiety and not in trait-anxiety. Since this was a brief (3-session) intervention, it is not unexpected that stable personality characteristics would remain unchanged while more acute states could improve. One might speculate that the decline in state-anxiety might have played a role in seizure reduction

although this extends beyond the scope of this study and would need to be examined more specifically in future ones. Regardless, this is a noteworthy finding since most psychoeducational interventions have not measured this particular variable; and the ones that have assessed anxiety did not obtain significant differences pre and post-intervention (24,35). Possibly, the presence of a companion in a setting that provided validation promoted this improvement however, this again, extends beyond the scope of the present study. On the other hand, considering that attending psychotherapy in Argentina is much less stigmatized than in other countries (37), attending a psychoeducational group may have also contributed to this finding.

As for severity of depressive symptomatology, a significant reduction was noted compared to pre-measures. This is consistent with findings from previous studies (38) although it should be noted that in the present case, this reduction took place following a much briefer intervention. Possibly, gaining understanding of their disorder and of the triggers may have contributed to an improvement in mood.

Although all patients in this sample reported prior exposure to psychological trauma and 50% were diagnosed with post-traumatic stress disorder (PTSD) during the initial psychiatric/psychological evaluation, no significant differences were noted on pre and post-trauma symptom measures. Other authors (21) have reported significant improvements on these variables upon completion of their interventions, however, it should be noted that those particular interventions included dedicated sessions on the role of trauma and physical and sexual abuse as precursors to PNES and the intervention as a whole was longer (10 sessions). Future interventions might consider including dedicated sessions focusing on these specific topics, especially since there is such a high rate of psychological trauma in these patients.

The same could be said regarding the mechanism of dissociation because, contrary to other studies, a significant reduction in these variables was not identified after the present intervention. This is especially relevant since it has been speculated that the mechanism of dissociation plays a key role in PNES (39–41). Nonetheless, possibly this is because the psychometric instrument

used in this study may have not have been sensitive enough to detect pre-post changes.

With regard to illness perception, a reduction in negative perceptions was noted in the present sample. This is consistent with previous studies (24) and is considered meaningful since previous studies have reported that negative perceptions of illness can have an adverse impact on diverse psychological experiences and on the patient's capacity to cope when faced with adverse events (42).

As for causal attributions of PNES, patients reported minimal changes. Only one patient shifted from a biological attribution (menarche and menstruation) to a psychological one. All other patients maintained their original causal attributions although it should be noted that they already held psychological attributions at the beginning of the intervention (and possibly this is why these patients agreed to a psychoeducational intervention in the first place). Causal attributions (42) have been underscored as important treatment targets when aiming to achieve an integrated biopsychosocial model which clearly differentiates PNES from the previous diagnosis of epilepsy (43). The present results are consistent with results reported previously in an Argentinian sample (44), compared to non-Hispanic samples (45). Nevertheless, it should be noted that this assertion is not necessarily signifying an acceptance of the PNES diagnosis (46); this would need to be specifically questioned.

Regarding the group format, the present group was brief, similar to the 3-session ones conducted by Chen et al (22), Cope et al (24), and the 4-session ones conducted by Conwill et. al. (35) and Mayor et. al. (47). A short intervention has the benefit of potentially producing positive effects in a relatively brief amount of time. It was preferable when designing this treatment because many patients lived at quite a distance from the hospital and struggled with the cost of transportation. However, when the final debriefing was conducted, some patients commented that they would have preferred additional psychoeducational sessions. Considering that a longer course might have permitted emotional and psychological trauma education to be included, this recommendation will be factored in for future group designs.

Lastly, the group modality was something participants rated as positive. It is possible that presenting education about common problems in PNES in a social setting allows for normalization of these and provides a sense of *universality*. Furthermore, the decision to include family members was made when designing the intervention because it was culturally sensitive to Argentina's collectivist and family oriented ("familismo") culture (48,49). Moreover, in Argentina typically family members are often highly involved and eager to understand what is happening to their relative and because they usually live in the same home, psychoeducation to this group of persons was also attractive. An expectation was that this would possibly improve patient attendance while also allowing a family member to learn about the disorder, thus widening the reach of the intervention.

This study is not without limitations including a small sample size (not allowing for comparisons between subgroups of patients) and the variable size of groups. It is possible that these differences in numbers could have had an impact on the final results (for example, discrepancies about seizure frequency after the intervention, among other variables). Moreover, the design was non-randomized or controlled which would clearly be a desirable direction in future along with larger studies comparing group outcomes to treatment-as-usual. Lastly, there was no (short or long term) follow up after the termination of the group which could have revealed whether results were maintained over time. One final point is that, in the future, obtaining feedback from the family members in attendance could also prove beneficial.

## **Conclusion**

Psychoeducational interventions appear to be of potential benefit in Argentinian patients with PNES. Although these results are preliminary, this type of intervention may be useful in cultures other than first world, predominantly Caucasian ones. This study represents an initial step in the design of empirically based psychoeducational/supportive initiatives for patients in Argentina. The results are promising and support conducting randomized controlled investigations and interventions in the future.



**Conflict of Interest**

The authors declare no conflicts of interest.

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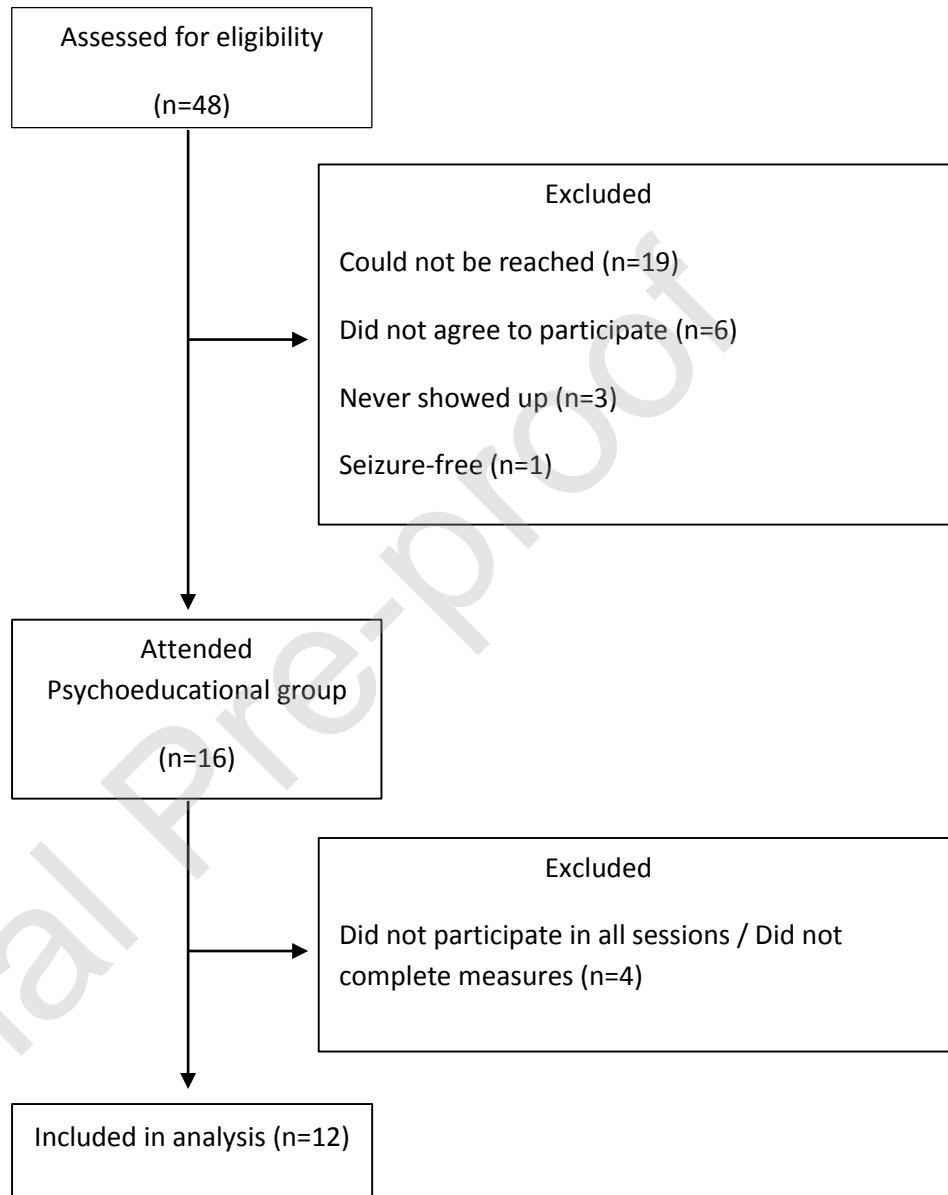
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**Figure 1 – Flow diagram of patient enrollment**

**Figure 2 – Description of the intervention**

A central theme was presented in a lecture format by the group coordinator in every session, guided by Power-Point slides. Secondly, active participation of patients and their companion was encouraged. Sessions 1 and 2 ended with of homework, which was discussed the next session. All participants were provided of the PPT slides in a hand-out format.

**Session 1 - Understanding PNES diagnosis****• Topics and activities**

- Introducing the goals of the workshop, the utility of psychoeducation, and the importance of understanding the PNES diagnosis.
- PNES and Epilepsy. What is the difference?
- How to understand a VEEG report. What does this mean?
- Emphasis on the involuntary nature of the events. The focus on the psychological causes is maintained in contrast to the biological ones.
- The role of dissociation.
- Sharing patients' and their companions' expectations and personal experiences regarding their diagnosis with PNES.
- Homework: Seizure record

**Session 2 - Understanding emotions****• Topics and activities**

- Summary of session 1. Homework check and discussion.
- The role of emotions: The goal is to increase the patients' awareness of emotions and their relation with PNES. Their role as predisposing, precipitating and perpetuating factors is discussed.
- An emphasis is placed on empowering each participant by teaching them techniques to help them lead with their emotions.
- Exercise in session: Body scan
- Homework: Record emotions before PNES.

**Session 3 - Living with PNES****• Topics and activities**

- Summary of sessions 1 and 2. Homework check and discussion
- Patients are encouraged to to share their personal experiences and emotions after receiving the diagnosis. Did your life change after the diagnosis?
- Information about what patients with PNES can and cannot do is discussed. The importance of social boundaries, working or studying, as well as everyday activities were emphasized.
- Patients are encouraged to set realistic goals in their lives, taking into account what they have learned in the workshop.
- Exercise in session: Deep breathing
- Saying goodbye. What did we learn?



**Table 1 – Sociodemographical and clinical data of participants**

<b>Age at psychoeducation (years)</b>	
M ± SD	30.75 ± 14.12
Min-Max	18-57
<b>Age when first seizure occurred (years)</b>	
M ± SD	17.92 ± 13.06
Min-Max	5-50
<b>N (%)</b>	
<b>Gender</b>	
Male	2 (16.7)
Female	10 (83.3)
<b>Place of residence</b>	
City of Buenos Aires	2 (16.7)
Buenos Aires outskirts	10 (83.3)
<b>Education</b>	
Complete Elementary	2 (25)
Incomplete High school	7 (58.3)
Trade school	1 (8.3)
Incomplete university	1 (8.3)
<b>Co-habitants in patient's home</b>	
Parents	7 (58.3)
Spouse	4 (33.3)
Child	1 (8.3)
<b>Occupation</b>	
Student	6 (50)
Unemployed	4 (33.3)
Employee	2 (16.7)
<b>VEEG diagnosis</b>	
PNES	10 (83.3)
Mixed	2 (16.7)
<b>Reported trauma</b>	
Physical/Sexual abuse/child abuse	9 (75)
Serious illness	6 (50)
Accident/disaster	7 (58.3)
Other	4 (33.3)
<b>PTSD diagnosis</b>	
Yes	6 (50)
No	6 (50)

**Table 2 – Patient responses regarding their diagnosis of PNES before and after attending the psychoeducational intervention**

	Pre-test [M (SD), RNG, and %]	Post-test [M (SD), RNG, and %]
<i>¿How many psychogenic non-epileptic seizures did you experience over the last two weeks?</i>	12.80 (18.39), 0-50	8 (15.42), 1-56
<i>¿Do you understand what psychogenic non-epileptic seizures are?</i>		
Yes	41.7%	91.7%
Somewhat	41.7%	8.3%
No	16.7%	0
<i>¿Do you understand what is the cause of your psychogenic non-epileptic seizures?</i>		
Yes	16.7%	66.7%
Somewhat	16.7%	33.3%
No	66.7%	0
<i>¿Do you know what situations, events, circumstances, sensations, emotions, etc. can trigger psychogenic non-epileptic seizures in you?</i>		
Yes	58.3%	75%
No	41.7%	25%
<i>¿Do your psychogenic non-epileptic seizures bother and affect your quality of life?</i>		
Yes	91.7%	58.3%
No	8.3%	41.7%
<i>In the last two weeks, were you not able to participate in a daily activity (e.g. study, work, go out of your home, use public transportation, participate in pleasurable activities) because of your psychogenic non-epileptic seizures?</i>		
Yes	58.3%	33.3%
No	41.7%	66.7%
<i>¿Can you control your psychogenic non-epileptic seizures?</i>		
Yes	16.7%	33.3%
Somewhat	41.7%	41.7%
No	41.7%	25%
<i>¿Do you worry that you might get hurt during one of your psychogenic non-epileptic seizures?</i>		
Yes	66.7%	25%
No	33.3%	75%
<i>¿Are you fearful of having a psychogenic non-epileptic seizure?</i>		
Yes, every day I am fearful of having a psychogenic non-epileptic seizure	25%	33.3%
Yes, from time to time I am fearful of having a psychogenic non-epileptic seizure	50%	16.7%
No, I am not fearful of having a psychogenic non-epileptic seizure	25%	50%
<i>Over the last two weeks, did you have to go to the emergency room?</i>		
Yes	16.7%	8.3%
No	83.3%	91.7%
<i>In the last two weeks, have you met with a psychologist or psychiatrist to treat your psychogenic non-epileptic seizures (not including the clinicians you are meeting with at the Epilepsy Center)?</i>		
Yes	50%	25%
No	50%	75%

**Table 3 – Wilcoxon signed rank test of psychological measures**

		N	Mean Rank	Sum of Ranks	Z	p value
STAI-state	- Ranks	3 <sup>a</sup>	3.17	9.50	-2.091	<b>.036</b>
	+ Ranks	8 <sup>b</sup>	7.06	56.50		
	Ties	1 <sup>c</sup>				
STAI-trait	- Ranks	4 <sup>a</sup>	4.50	18.00	-1.654	.098
	+ Ranks	8 <sup>b</sup>	7.50	60.00		
	Ties	0 <sup>c</sup>				
BDI-II	- Ranks	2 <sup>a</sup>	4.50	9.00	-2.355	<b>.019</b>
	+ Ranks	10 <sup>b</sup>	6.90	69.00		
	Ties	0 <sup>c</sup>				
B-IPQ	- Ranks	1 <sup>a</sup>	5.50	5.50	-2.446	<b>.014</b>
	+ Ranks	10 <sup>b</sup>	6.05	60.50		
	Ties	1 <sup>c</sup>				
PDS-5	- Ranks	3 <sup>a</sup>	7.33	22.00	-0.979	.328
	+ Ranks	8 <sup>b</sup>	5.50	44.00		
	Ties	0 <sup>c</sup>				
DES-M	- Ranks	6 <sup>a</sup>	4.83	29.00	-0.785	.432
	+ Ranks	6 <sup>b</sup>	8.17	49.00		
	Ties	0 <sup>c</sup>				

Significance level = .05. Confidence interval = 95%.

a. Pre-test < Post-test  
b. Pre-test > Post-test  
c. Pre-test = Post-test

**Table 4 – Participants' feedback regarding the workshop**

<i>¿How satisfied are you with having participated in this workshop?</i>	
I am very satisfied of having participated in this workshop; it was very useful	75%
I am somewhat satisfied with having participated in this workshop; there were some things with which it helped me	25%
I am not satisfied with this workshop; it was of no use to me	0%
<i>¿Do you believe that attending this workshop will help you improve your quality of life?</i>	
Yes, I believe that attending this workshop will help me improve my quality of life a lot.	41.7%
Yes, I believe that attending this workshop will help me improve my quality of life a little.	50%
No, I do not believe that attending this workshop will help me improve my quality of life.	8.3%
N = 12	