

Brief Communication

A pilot study of reduction in healthcare costs following the application of intensive short-term dynamic psychotherapy for psychogenic nonepileptic seizures



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ABSTRACT

Purpose: The purpose of this study was to examine preliminary evidence of intensive short-term dynamic psychotherapy (ISTDP) as a treatment option for psychogenic nonepileptic seizures (PNES) in terms of impact on healthcare costs, emotional wellbeing, and somatic symptoms.

Method: Drawn from a sample of patients treated in a tertiary psychiatric service over a nine-year period, this naturalistic pilot study compared within-group changes from pretreatment with each year up to three years posttreatment, in physician visits, physician costs, hospital admissions, and overall hospital costs.

Results: Twenty-eight patients with PNES received ISTDP with average treatment duration of 3.6 sessions. Healthcare costs significantly reduced in follow-up compared with those in baseline, with patient costs falling below the healthy population means, and reductions in healthcare costs compared with those in baseline by 88% in year one, 90% in year two, and 81% in year three. This was accompanied by significant reductions in symptoms and interpersonal problems.

Conclusion: These preliminary findings indicate the potential for short-term and long-term healthcare savings and improvements in emotional wellbeing, for patients with PNES from the application of ISTDP. Further research evaluating the impact of ISTDP on seizure reduction and comparing this approach with control conditions is warranted.

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1. Introduction

Psychogenic nonepileptic seizures (PNES) are diagnosed in up to one-third of all patients of tertiary epilepsy centers usually presenting as “pharmacoresistant” spells. They are commonly characterized by a sudden onset of a wide range of clinical symptoms (behavioral, consciousness impairment, motor, sensory) of fluctuating duration, occasionally mimicking epileptic seizures (ES). Absence of electrophysiological correlates of epilepsy in video-monitoring is a key feature of PNES. They have a high prevalence of psychiatric comorbidities [1].

It is critical to make this diagnosis early in order to initiate the appropriate treatment and avoid unnecessary drug toxicity and chronicity. The negative psychological and subsequently socioeconomic sequelae of PNES are profound, and healthcare costs grow exponentially with the delay of the diagnosis [2].

Wiseman and Reuber [3] report on recent advances in understanding PNES and present an emerging consensus that this condition can be best understood within a biopsychosocial framework. They observe a number of specific psychological factors found to be associated with PNES, including childhood trauma, affect dysregulation, and emotion avoidance. This highlights the potential role for psychological therapy in the treatment of this condition.

In a Cochrane review of psychological treatment for adults with PNES, Martlew et al. [4] identify twelve studies with four reaching the ‘gold standard’ of a randomized control study (RCT). We undertook an updated review of the literature¹ and identified seven further studies published since 2013. This included three RCTs, two of individual interventions: psychodynamic interpersonal treatment [5], cognitive behavioral therapy [6], and an RCT examining a brief educational group approach for treating PNES [7]. Four additional noncontrolled

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¹ The review was conducted using the comprehensive databases Medline, Embase, Psychinfo, and Cinahl.

studies have been undertaken examining individual interventions: cognitive behavioral therapy [8], paradoxical intention therapy [9], psychoeducation [10], and an eclectic-psychotherapy group approach [11]. Overall, there appears to be emerging evidence of potential benefits from a range of therapeutic modalities in the treatment of PNES. However, there is a striking absence of long-term follow-up data [4] or health economics data to make the financial case to service providers for supporting the development of new services for this condition.

Intensive short-term dynamic psychotherapy (ISTDP) is a contemporary psychodynamic approach that has evidenced long-term symptom reduction and significant healthcare savings when treating patients with mental health conditions and/or somatic symptom disorders [12–14]. It conceptualizes somatic symptoms as emerging from the patient's habitual and unconscious avoidance of emotional experience and the subsequent pathophysiological anxiety states accompanying this avoidance process.

The affect dysregulation and emotional avoidance characteristic of patients with PNES suggest that this condition may be amenable to ISTDP. In this model, these patients would be considered to have a set of psychological deficits called fragile character structure that is accompanied by cognitive and perceptual disruption and/or conversion [15]. Such patients are exquisitely sensitive to activated feelings and are highly emotionally avoidant.

Intensive short-term dynamic psychotherapy has a supportive format developed to build affect tolerance, anxiety regulation, and emotional insight. As patients become more robust in the face of intense affect, they are able to retain their ability to self-reflect, which leads to observable changes in physiological manifestations of anxiety. This process appears to overcome somatic disorders by augmenting reflective function and bringing about a distinct change in somatopsychic function [15,16].

In light of growing interest in psychological therapy for PNES and the emerging evidence for ISTDP as an effective treatment for somatic disorders, the purpose of this pilot study was to provide a preliminary investigation into the feasibility and potential impact of using ISTDP as a treatment for PNES. To this end, emotional wellbeing (symptoms and interpersonal problems) and healthcare cost/utilization were measured as primary indicators of feasibility and impact with regard to immediate and long-term outcomes of ISTDP for service-users and service-funding agencies.

2. Method

This is a substudy of 28 patients with PNES within a large ($n = 1182$) patient healthcare cost study of ISTDP for tertiary psychotherapy patients with mixed diagnoses. The study included an independent extraction of anonymized grouped cost and utilization data. Its methods are published [13], and it is registered at ClinicalTrials.org (NCT01924715).

All patients with PNES included in this analysis underwent comprehensive neurological assessment and diagnosis including video-EEG recordings. Hospital and physician cost and utilization data were extracted for 1 year before and up to 3 years after ISTDP treatment. Tests of statistical significance were only performed for the 1 year pre- versus

1 year postdata because of limitations in access to the government-linked database.

Self-report measures, including the 53-item Brief Symptom Inventory (BSI) [17] and the 32-item Inventory of Interpersonal Problems (IIP-32) [18], were phased in during the interval of this naturalistic study. Pre-versus post- t -tests and Cohen's d [19], effect sizes were calculated from available data.

3. Results

3.1. Treatment

Twenty-eight patients (16 females and 12 males) with PNES received a mean of 3.6 [SD: 4.9; range: 1–25] standardized ISTDP sessions from 7 different therapists. The wide range of treatment sessions reflects the differing levels of PNES severity, comorbidities, and readiness for therapy, typical of a naturalistic study of a psychosomatic clinical population. Over a third of the patients presented with moderate-to-severe fragile character structure [20] with dissociation observable in the treatment sessions ($n = 10$), and the remaining patients had more mild degrees of fragility evident with transient cognitive or perceptual disruption in treatment sessions. Dissociation is common in patients with PNES [21] and is amenable to ISTDP treatment [22] using the supportive format to build capacity [15,16].

3.2. Self-report outcomes

As a result of standardized outcome measures being implemented partway through the period of this study, the BSI and IIP-32 were completed pretherapy by 19 and 15 patients, respectively, and posttherapy measures were acquired for 11 of these patients.

The Brief Symptom Inventory Global Severity Index scores pretherapy ($M = 1.54$, $SD = 0.96$) and posttherapy ($M = 0.91$, $SD = 0.81$) revealed a statistically significant reduction ($p = 0.01$). Changes on BSI subscales including somatization, depression, anxiety, hostility, phobic anxiety, and psychoticism reached statistical significance ($p \leq 0.05$). A statistically significant reduction was also found for patient IIP total score ($p = 0.03$) posttherapy ($M = 0.85$, $SD = 0.59$) compared with pretherapy ($M = 1.34$, $SD = 0.7$). The IIP subscales 'overly accommodating' and 'socially inhibited', features commonly seen in patients with PNES, were also significantly improved ($p < 0.05$). Effect sizes, using Cohen's d , were $d = 0.69$ and $d = 0.75$ on the BSI and IIP, respectively.

3.3. Healthcare utilization and cost

Physician visits and costs were significantly reduced between baseline and year 1. Physician costs remained below the healthy population annual mean costs of \$600 in 2- and 3-year follow-up (Table 1). The hospital admission rate was also significantly reduced between baseline and year 1 and remained low in 3-year follow-up. Hospital days and cost data were widely distributed across patients, therefore, although reductions in service use and costs were large, differences did not achieve statistical significance at year 1 follow-up. Total combined cost

Table 1
Healthcare utilization and cost data^a pre- and posttreatment.

Time period (n)	Physician visits	Physician costs	Hospital admissions	Hospital days	Hospital costs
Baseline year	22.8 (24.6)	1083.1 (1223)	1.43 (2.38)	17.39 (52.1)	21,856.0 (64,256)
Year 1 (28)	15.6 (20.9)*	696.5 (942)*	0.46 (0.69)*	2.0 (4.46)	2684.1 (5355.6)
Year 2 (22)	11.6 (10.7)	557.5 (570)	0.59 (1.22)	0.73 (1.61)	1578.5 (3254.5)
Year 3 (15)	10.6 (15.4)	578.0 (950)	0.53 (1.36)	2.47 (7.56)	3884.6 (12,553)

* t -Test demonstrated within-group change from baseline year is significant ($p < 0.05$).

^a Year 2007 equivalent Canadian Dollars.

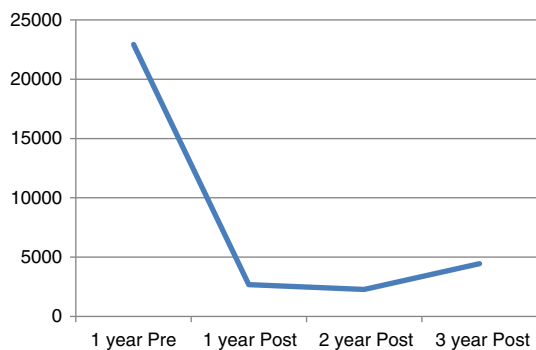


Fig. 1. Mean physician and hospital costs^a pre- versus posttreatment.

reduction was extensive showing 88%, 90%, and 81% reductions over baseline costs in years 1–3 follow-up, respectively (Fig. 1).

4. Discussion

Within the limitations of this study, the results present preliminary evidence of the potential for health economic benefits and improvements in emotional wellbeing and interpersonal functioning from the application of ISTDP in patients with PNES. A reduction in healthcare utilization following the psychological treatment of PNES with ISTDP is consistent with the biopsychosocial understanding of the etiology of PNES that highlights the relevance of psychological variables, such as emotional avoidance and affect dysregulation, as contributing factors to the condition.

These findings contribute to the growing literature on psychological therapy for PNES [4] and add a further dimension by presenting long-term health economics data to make a case for potential financial benefits of initiating therapy as a treatment option for this population. The implication from this study that the reduction in healthcare utilization has the possibility of being both significant and long-lasting indicates that further research is warranted.

These results should, however, be considered within the context of the limitations of this study. The sample size was relatively small ($n = 28$), and in addition, the hospital cost data were widely dispersed leading to problems in detecting differences even though hospital cost reductions were substantial. There was also an absence of a control condition that could provide more assurance of the specific role of therapy in reducing symptoms and healthcare utilization. This is especially important since low-intensity interventions and diagnosis alone can result in decreased symptoms [23] and certain aspects of healthcare utilization [24]. Because of individual data access limitations, we did not have details of pre- versus postseizure dynamics (frequency, intensity, duration) restricting conclusions that can be reached regarding the impact of ISTDP on this core feature of PNES; however, sustained normalization of healthcare use stands as an objective measure of improved health likely directly linked to reduced events. Finally, the data suffer from not capturing information on nonphysician treatment utilization as this may have offered a fuller picture of health service utilization. These findings therefore require replication in a larger study with a wider range of outcomes.

The naturalistic design of this pilot study does present some strengths pertaining to the ecological validity of these findings. Patients were treated by therapists with a range of experience as part of routine practice, and there was no exclusion criterion for patients with comorbid conditions. The mean length of treatment (3.6 sessions) also provides a realistic benchmark for healthcare services limited in resources and seeking brief

solutions that may deliver long-term benefits for this high service-using population.

Declaration of interest

The authors have no conflicts of interest to report

References

- [1] Bodde NMG, Brooks JL, Baker GA, Boon PAJM, Hendriksen JGM, Mulder OG, et al. Psychogenic non-epileptic seizures—definition, etiology, treatment and prognostic issues: a critical review. *Seizure* 2009;18(8):543–53.
- [2] LaFrance W, Benbadis S. Avoiding the costs of unrecognized psychological nonepileptic seizures. *Neurology* 2006;66:1620–1.
- [3] Wiseman H, Reuber M. New insights into psychogenic nonepileptic seizures 2011–2014. *Seizure* 2015;29:69–80.
- [4] Martlew J, Pulman J, Marson AG. Psychological and behavioural treatments for adults with non-epileptic attack disorder. *The Cochrane Library*; 2014.
- [5] Hubschmid M, Aybek S, Maccaferri GE, Chocron O, Gholamrezaee MM, Rossetti AO, et al. Efficacy of brief interdisciplinary psychotherapeutic intervention for motor conversion disorder and nonepileptic attacks. *Gen Hosp Psychiatry* 2015;37(5):448–55.
- [6] LaFrance WC, Baird GL, Barry JJ, Blum AS, Webb AF, Keitner GI, et al. Multicenter pilot treatment trial for psychogenic nonepileptic seizures: a randomized clinical trial. *JAMA Psychiatry* 2014;71(9):997–1005.
- [7] Thompson N, Connelly L, Peltzer J, Nowack WJ, Hamera E, Hunter EE. Psychogenic nonepileptic seizures: a pilot study of a brief educational intervention. *Perspect Psychiatr Care* 2013;49(2):78–83.
- [8] Conwill M, Oakley L, Evans K, Cavanna AE. CBT-based group therapy intervention for nonepileptic attacks and other functional neurological symptoms: a pilot study. *Epilepsy Behav* 2014;34:68–72.
- [9] Chapleau KM, Landsberger SA, Povlinski J, Diaz DR. Using paradoxical intention therapy to treat refractory nonepileptic events. *Psychosomatics* 2013;54(4):398–401.
- [10] Mayor R, Brown RJ, Cock H, House A, Howlett S, Smith P, et al. A feasibility study of a brief psycho-educational intervention for psychogenic nonepileptic seizures. *Seizure* 2013;22(9):760–5.
- [11] Metin SZ, Ozmen M, Metin B, Talasman S, Yeni SN, Ozkara C. Treatment with group psychotherapy for chronic psychogenic nonepileptic seizures. *Epilepsy Behav* 2013;28(1):91–4.
- [12] Abbass A, Town J, Driessen E. Intensive short-term dynamic psychotherapy: a systematic review and meta-analysis of outcome research. *Harv Rev Psychiatry* 2012;20(2):97–108.
- [13] Abbass A, Kisely S, Rasic D, Town JM, Johansson R. Long-term healthcare cost reduction with intensive short-term dynamic psychotherapy in a tertiary psychiatric service. *J Psychiatr Res* 2015;64:114–20.
- [14] Town JM, Driessen E. Emerging evidence for intensive short-term dynamic psychotherapy with personality disorders and somatic disorders. *Psychiatr Ann* 2013;43:502–7.
- [15] Abbass AA. *Reaching through resistance: advanced psychotherapy techniques*. Kansas City: Seven Leaves Press; 2015.
- [16] Davanloo H. Intensive short-term dynamic psychotherapy with highly resistant depressed patients: I. Restructuring ego's regressive defenses. In: Davanloo H, editor. *Unlocking the unconscious*. New York: Wiley; 1990. p. 47–80.
- [17] Derogatis LR, Melisaratos N. The brief symptom inventory: an introductory report. *Psychol Med* 1983;13(03):595–605.
- [18] Horowitz LM, Rosenberg SE, Baer BA, Ureño G, Villaseñor VS. Inventory of interpersonal problems: psychometric properties and clinical applications. *J Consult Clin Psychol* 1988;56(6):885.
- [19] Cohen J. *Statistical power analysis for the behavioral sciences*. 2nd ed. Hillsdale, NJ: Erlbaum; 1998.
- [20] Davanloo H. Intensive short-term dynamic psychotherapy: spectrum of psychoneurotic disorders. In: Davanloo H, editor. *Intensive short-term dynamic psychotherapy*. Chichester: John Wiley and Sons; 2001. p. 1–35.
- [21] Hendrickson R, Popescu A, Ghearing G, Bagic A. Thoughts, emotions, and dissociative features differentiate patients with epilepsy from patients with psychogenic nonepileptic spells (PNESs). *Epilepsy Behav* 2015;51:158–62.
- [22] Johansson R, Town JM, Abbass A. Davanloo's intensive short-term dynamic psychotherapy in a tertiary psychotherapy service: overall effectiveness and association between unlocking the unconscious and outcome. *Peer J* 2014;2, e548.
- [22] Drane DL, LaRoche SM, Ganesh GA, Teagarden D, Loring DW. A standardized diagnostic approach and ongoing feedback improves outcome in psychogenic nonepileptic seizures. *Epilepsy Behav* 2016;54:34–9.
- [24] Nunez-Wallace KR, Murphey DK, Proto D, Collins RL, Franks R, Chachere DM, et al. Health resource utilization among US veterans with psychogenic nonepileptic seizures: a comparison before and after video-EEG monitoring. *Epilepsy Res* 2015;114:114–21.