**Evaluation of a pilot innovative CBT- based psychoeducation group treatment for functional non epileptic attacks**

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**Abstract**

A high proportion of patients presenting at epilepsy clinics experience functional non-epileptic attacks (FNEA), and whilst psychological treatment is generally thought to be the required intervention, evidence regarding psychological treatment of FNEA is limited. A small number of psychoeducation treatments have been evaluated, with promising results. As part of routine care within a neuropsychiatry service, a 3-session cognitive-behavior therapy- (CBT-) informed psychoeducation group was developed. Patients with comorbid epilepsy were included. The group’s effectiveness was evaluated in terms of attack frequency, mood, illness perception, dissociative experiences, and patient feedback. Pre- and post-treatment data was obtained for 19 patients. The proportion of patients experiencing attacks significantly decreased, with almost 40% of treatment completers reporting being attack-free at the end of treatment. Significant improvements were also found on level of psychological distress, illness beliefs and understanding of the condition. No significant changes in mood or general functioning were observed. High satisfaction was reported by almost all patients. Treatment outcome was not significantly affected by the level of dissociative experiences. The results suggest that CBT-based psychoeducation group treatment can be a beneficial part of treatment for those with FNEA, even for those experiencing high levels of dissociation. Further controlled studies with larger sample sizes are required.

**Highlights**

* CBT-based group psychoeducation was evaluated for treatment of FNEA.
* The proportion of patients experiencing FNEA significantly reduced after treatment.
* Improvements in psychological wellbeing and illness beliefs were also observed.

**Keywords:** Functional non-epileptic attacks; Dissociative seizures; Non-Epileptic Attack Disorder; Treatment; CBT; Intervention

1. **Introduction**

It is thought that between 10 and 22% of patients presenting to epilepsy clinics have functional non-epileptic attacks (FNEA) [1]. Generally, psychological treatment is considered to be the most appropriate treatment [2–4], but there are currently no guidelines on psychological treatment of FNEA due to a lack of large randomized controlled trials (RCTs). Psychological treatment of FNEA is complex, as patients with FNEA are likely to have comorbid psychiatric diagnoses, such as depression, post-traumatic stress disorder (PTSD), and panic disorder [5]. Various psychological treatment modalities have been reported in case reports and open label studies and the majority of research has focused on the provision of individual psychological treatment for FNEA [2]. A number of psychoeducation approaches have been described and generally reported to be beneficial [6–10]. Psychodynamic approaches have been examined [11], and cognitive-behavioral therapy (CBT) has been found to be effective in two pilot RCTs [12,13], although a Cochrane review published in 2014 concluded there was little reliable evidence to support any treatment for FNEA, including CBT [14].

In the International Statistical Classification of Diseases and Related Health Problems (ICD-10), FNEA are classified as dissociative convulsions, and come under the broader category of dissociative (conversion) disorders [20]. In the Diagnostic and Statistical Manual of Mental Disorders (DSM-V), FNEA are classified as a sub-type of a conversion disorder (functional neurological symptom disorder) [18]. There have been no direct causative factors found for why people develop FNEA, but many studies have identified associations between factors such as trauma, dissociative tendencies, emotion regulation difficulties, somatization, mental health difficulties, stressful and life events and experiencing epilepsy or having a family member with epilepsy [15–17]. Dissociation is a proposed mechanism in the forming of a FNEA (as evident by the term dissociative seizures). Dissociation is a broad term that refers to “a disruption of and/or discontinuity in the normal integration of consciousness, memory, identity, emotion, perception, body representation, motor control, and behavior” [18] (p. 291). The term is used to describe a variety of trauma-related experiences including depersonalization, derealization, flashbacks, and emotional numbing [19], and is considered a key mechanism in FNEA, dissociative fugue states, dissociative identity disorder and dissociative amnesia. Dissociation has been proposed to be part of “normal” experience, with “absorption” as an example of non-pathological dissociation on one end of a continuum, and dissociative disorders falling on the pathological end of a continuum [19]. Severity of dissociation has been proposed to interfere with emotional processing during exposure-based PTSD treatment, but evidence for [21] and against [22,23] this theory has been found. To our knowledge, no previous research has examined the impact of the level of dissociation on treatment outcome for patients with FNEA.

NHS Scotland (2012) recommends that treatment for functional neurological symptoms should include the following available: 1. Functional neurological symptoms diagnosed and appropriately explained by a neurologist; 2. Brief and effective treatments offered when explanation alone is unsuccessful (e.g., brief guided self-help program); and 3. Services for patients with severe and intractable functional neurological symptoms [20]. Presenting the diagnosis of FNEA can result in the substantial reduction or cessation of FNEA [4], but explanation alone does not always result in cessation. Brief psychoeducation treatments have been evaluated in both individual and group formats, in line with NHS Scotland’s recommendations. Sharpe et al. (2011) [21] in an RCT evaluated the efficacy of an individual manual based guided self-help (GSH) CBT intervention in people with various functional neurological symptoms including FNEA . They found that those who had received CBT-based GSH evidenced significantly improved subjective health at 3 months, in comparison to those without GSH. In addition, those patients with GSH also showed greater improvements in their presenting symptoms, as well as reduced symptom burden, less health anxiety and greater satisfaction with care. At 6-month follow-up, the improvement in subjective health was no longer significantly better than usual care when measured on the 5-point clinical global improvement scale (CGI); but there were still significant improvements in symptoms, a significant reduction in the belief that the symptoms are permanent and significantly greater overall satisfaction with their received care. Using a smaller sample, individual GSH was evaluated by Mayor and colleagues [8] for patients experiencing FNEA. No significant effect on attack frequency was observed, but examining on an individual patient level, 4 patients became attack free and 3 patients had more than a 50% reduction in total number of attacks. A further study was carried out using the same psychoeducation intervention. A larger sample of patients received individual psychoeducation over 4 sessions. The authors found significant improvements in wellbeing and illness beliefs following the intervention. They did not find a significant reduction in attack frequency, but 48% of patients experienced a reduction in attacks or were attack-free at the end of treatment [10].

In a group format, Conwill and colleagues [6] investigated the effectiveness of a series of 4 CBT-informed group sessions designed to treat FNEA and other functional neurological symptoms. A focus on behavioral change was introduced and a CBT approach was utilized, drawing links between patients’ thoughts, feelings, behaviors and physical symptoms. Data from 16 patients (FNEA: n = 10; Other: n = 6) indicated significant improvements on the SF-36 subscales of ‘role limitation due to emotional wellbeing’ and ‘emotional wellbeing’. Group psychoeducation was also trailed by Chen et al. (2014), who randomized patients into either group psychoeducation or the control group [9]. Patients in the psychoeducation group received 3 monthly sessions, addressing identifying FNEA triggers, stress management, activity scheduling and distress tolerance. Patients’ family members were also encouraged to attend. Although they found no significant improvement in terms of attack frequency after treatment, they did report significant improvements in terms of general functioning (measured using the Work and Social Adjustment Scale).

Psychoeducation in both individual and group formats has been shown to be a potentially beneficial part of treatment of FNEA. Psychoeducation offered in a group format has a number of advantages, including: treating a number of patients at the same time making it cost effective; patients can meet others with FNEA; learning that the condition is not rare; and patients can learn from and support one another [22]. However, the best way to deliver group psychoeducation remains unclear and a greater evidence base is needed. In line with the emerging evidence, an innovative CBT-based psychoeducation group was developed as part of routine care within a neuropsychiatry service. This evaluation focuses on the group’s effectiveness with respect to patients’ attack frequency and changes in mood and illness perception, as well as patient feedback about the intervention. The extent to which patients’ level of dissociative experiences impacted on the effectiveness of the treatment was also investigated.

**2. Method**

*2.1. Participants*

Participants were outpatients who were diagnosed with FNEA by the epilepsy neurologists at the regional neurosciences center, St George’s Hospital, London. They were subsequently seen at the Neuropsychiatry clinic closely allied to the epilepsy clinics. Patients were referred to the psychoeducation group sessions following an assessment by a neuropsychiatrist. Seven groups ran in total and range of attendance was between 2-4 patients for each group; on average 4 patients. Data was collected as part of routine clinical practice to evaluate the intervention. Patients were excluded if they were not able to understand written/spoken English, had severe learning disabilities or were acutely psychiatrically unwell. Patients were not excluded if they had comorbid epilepsy.

*2.2. Intervention*

Patients were invited to attend 3 CBT-based psychoeducation group sessions, running over the course of consecutive weeks. The group sessions were 90 minutes in length. In each session, information was presented in a lecture format by a neuropsychiatrist and a clinical psychologist (NA & SC) in the first session and patients were provided with the PowerPoint presentation slides in a hand-out format. The further 2 sessions were run by a clinical psychologist (SC) alone. Patients were encouraged to engage in brief group discussions regarding their personal experiences that were relevant to materials presented in the sessions. Patients also had the opportunity to ask any questions about the presented information as the session commenced, and at the end of the session. Patients were given homework tasks following the first and second session and were asked to bring their completed work to the following session. Patients had the chance to discuss this with their group-peers and share any comments/suggestions on their experiences of the tasks.

The CBT-informed psychoeducation group sessions were written by 2 of the authors (SC & NA). The aims were to help patients understand their diagnosis and to meet others with the same diagnosis. The sessions also focused on what may be contributing to the maintenance of their FNEA, with the aim of improving patients’ self-management. Whilst attending the group, no patients were attending any other psycho-therapeutic interventions. A summary of the group sessions’ content can be found in Table 1.

**Table 1**

Brief Summary of Group Content

|  |  |
| --- | --- |
| **Session 1** | Explained the diagnosis of FNEA and introduced the CBT model. |
| **Session 2** | Discussed behaviors and responses to FNEA that may be maintaining them, e.g., avoidance, monitoring body for signs of a FNEA. This session also introduced techniques to help manage symptoms such as sensory grounding strategies and distraction methods. |
| **Session 3** | Introduced cognitive aspects such as recognizing and challenging unhelpful thoughts. This session also included relaxation strategies. Patients were encouraged to set realistic goals regarding using what they had learned. |

*2.3. Outcome Measures*

Participants completed all measures before and after the group sessions, with the exception of the Dissociative Experiences Scale, which was only completed prior to the first session.

*2.3.1. Demographic data*

Data on age, gender, marital and employment status were collected.

*2.3.2. Frequency and intensity of FNEA*

Patients were asked to give the frequency of their FNEA over the past 4 previous weeks, and were also asked to indicate the number of times they had attended A&E over the past 4 weeks. Patients were also asked to rate the intensity of their FNEA, ranging from “Extremely mild” to “Extremely severe”.

*2.3.3. Attitudes towards FNEA*

Patients were asked to rate their level of acceptance of their diagnosis on a 5-point scale ranging from “Do not accept” to “Accept”. On a further 4 series of 5-point scales that ranged from “Strongly disagree” to “Strongly agree”, patients were asked to indicate their agreement /disagreement with the following statements: “I understand my FNEA”; “My FNEA do not affect my life”; “My FNEA do not scare me”; “Despite my FNEA, I am able to carry on with most of my essential daily activities”.

*2.3.4. Measures of mood*

Revised Emotional Thermometer Scale (ET7) [23]: This screening tool is recommended by the National Institute for Health and Clinical Excellence (NICE) (2009) to screen for psychological distress. The tool incorporates an 11-point Likert scale, on a series of 4 scales that focus on emotional upset, and 3 scales that concern emotional burden. All questions were based over the previous 2 weeks. The emotional upset section required individuals to rate their distress, anxiety, depression and anger felt on a scale of 0-10, where 10 indicated “Extreme” and 0 indicated “None”. The emotional impact section asked them to rate the duration, burden and need for help as a result of their emotional upset. On these questions, 0 indicated the least level of impact and 10 indicated the most severe levels of impact. When tested against other measures for depression in epilepsy patients, this tool has been shown to have very good reliability [23].

Patient Health Questionnaire (PHQ-9) [24]: The PHQ-9 is a tool devised to calculate a score that indicates the level of depression. This tool is very commonly used amongst mental health assessments and is considered to a reliable and valid measure of depression severity [24]. The PHQ-9 has been previously used in research to identify prevalence of depression in epilepsy outpatient clinics [25]. The PHQ-9 asks participants to indicate how often they have been bothered by a range of problems over the past 2 weeks. The options range from 0-3, where 0 indicates “not at all” and 3 indicates “nearly every day”. A PHQ-9 score of 0-4 indicates sub-clinical depression, whereas scores of 5-9, 10-14, 1-19 and 20-27 indicate mild, moderate, moderately severe and severe, respectively.

Generalised Anxiety Disorder Scale (GAD-7)[26]: The GAD-7 was used to calculate a score of generalized anxiety felt by the individual. The GAD-7 has been found to have good reliability, factorial validity, and concurrent validity, and good cross-cultural validity [27]. Like the PHQ-9, the GAD-7 asks participants to indicate how often they have been bothered by a range of problems over the past 2 weeks. The options range from 0-3, where 0 indicates “not at all”, and 3 indicates “nearly every day”. A GAD-7 score of 0-4 indicates sub-clinical anxiety, whereas scores of 5-9, 10-15, and 16-21 indicate mild, moderate and severe anxiety, respectively

*2.3.5. Impact on Functioning*

Work & Social Adjustment Scale (WSAS) [28]: This measure has been stated to be a valid, reliable and change-sensitive measure of work/social and other adjustment in disorders [29]. The tool was used to assess to what extent individuals’ FNEA affected their daily lives over the previous 2 weeks. The 5 areas of assessment were: Work, home management, social leisure activities, private leisure activities, and family and relationships.

*2.3.6. Illness Beliefs*

The Brief Illness Perception Questionnaire (BIPQ) [30] is designed to assess the cognitive and emotional representation of the individuals’ illness. This tool was adapted slightly, by asking patients to focus on their FNEA specifically (not any other illnesses) over the previous 2-week period. It included 8 questions that each had a scale of 0-10. Questions included: “How much does your illness affect your life?” “How long do you think your illness will continue?” “How concerned are you about your illness?” A higher overall score is thought to reflect a more threatening view of the illness. This tool has been found to show good test-retest reliability and concurrent validity with relevant measures. It is also known to demonstrate good predictive validity [30].

*2.3.7. Dissociative Experiences*

Dissociative Experiences Scale II (DES-II) [31,32] measures to what extent patients experienced dissociative experiences. It is designed as a trait measure and stable scores are expected over a short period of time (therefore it was not administered at the end of the group sessions, as a change would not be expected over the intervention period). The scale features 28 questions with rating scales between 0%-100%. The questions asked patients to rate the percentage of the time they have the experience described in the question; 0% on the scale represented “Never” and 100% “Always”. Example questions include: “Some people have the experience of finding new things among their belongings that they do not remember buying. Circle the number to show what percentage of the time this happens to you”; “Some people have the experience of finding themselves dressed in clothes that they don’t remember putting on. Circle the number to show what percentage of the time this happens to you”. The mean response score is calculated, and the higher an individual’s score, the greater the level of their dissociative experiences. A cut-off of above 30 is suggested to group people into “high dissociators”, with those scoring below 30 labelled as “low dissociators”.[32]. The scale has good reliability [33] and validity [34].

*2.3.8. Patients’ evaluation*

After attending the group, patients were asked to fill in a feedback form consisting of 6 questions. The first 3 questions included: “How satisfied were you with the group?”, “My attendance of the group will improve my quality of life” and “If friends or family were experiencing functional non-epileptic attacks, how likely would you be to recommend this group?”. Patients were asked to indicate their answers to these questions on 3 scales that ranged between 0-5. For question 1, 0 on the scale indicated “Not at all satisfied” and 5 indicated “Very satisfied”. For question 2, 0 indicated “Not at all” and 5 indicated “Very much”. For question 3, 0 indicated “Unlikely” and 5 indicated “Very likely”. For the final 3 questions, patients were given blank spaces for written feedback. They were asked what they found helpful about the group, what they found unhelpful about the group and how they thought the group could be improved.

*2.4. Statistical analysis*

Means and standard deviations were calculated for questionnaire scales and frequencies and percentages for other indicators of perceived function at pre- and post-intervention. To evaluate whether function improved and/or illness-related perceptions changed in a significant manner after the intervention, pairwise comparisons (paired sample *t*-tests or McNemar mid-p test for binary matched-pair data, depending on distributional properties) were made and Cohen's (1988) sizes calculated [36]. Where continuous variables (some item responses on the ET7 and BIPQ) did not meet requirements for univariate normality using skewness and kurtosis estimates (acceptable range between -1 and +1 and -1.5 and +1.5, respectively [37]), bias corrected and accelerated (Bca) bootstrapping using 2000 replications was employed [38]. To investigate the influence of dissociative state on function and treatment change, a series of repeated measures analysis of variance (ANOVA) were administered with Dissociative level (low versus high) as a between-group factor. Residualised change scores for outcome measures were computed and associations with illness duration and presence of comorbid epilepsy examined. All statistical analyses were completed with the Statistical Package for the Social Sciences, Release 22.0 (SPSS, IBM) with a criterion for statistical significance set at p < 0.05.

**3. Results**

*3.1. Demographics and Clinical Profile*

Twenty-five patients participated in the intervention across 7 programs. The socio-demographic characteristics and clinical data of participants are shown in Table 2. The vast majority of patients were female, with a wide age range. A little more than half of patients were single while slightly less than half were unemployed. The perceived intensity of patients’ FNEA varied considerably across patients, although almost 40% reported their condition as severe. Nearly 80% of patients had experienced one or more FNEA in the 4 weeks prior to intervention, almost half of whom reported 6 or more attacks. There was a high level of dissociative experiences in 7 patients.

|  |  |
| --- | --- |
| **Table 2**  Socio-demographic data and clinical profile for FNEA sample at program entry (n = 25). Please note: Values represent frequency (percentage) unless otherwise stated. | |
| Male / Female | 4 (16.0) / 21 (84.0) |
| Age (years) |  |
| 18-25 | 5 (20.0) |
| 26-35 | 8 (32.0) |
| 36-45 | 8 (32.0) |
| 46+ | 4 (16.0) |
| Marital status |  |
| Single | 14 (56.0) |
| Wife/Husband or partner | 8 (32.0) |
| Separated or divorced | 3 (12.0) |
| Employment status |  |
| Employed/Student | 11 (44.0) |
| Unemployed | 12 (48.0) |
| Retired/Home duties | 2 (8.0) |
| FNEA duration (years) | M = 7.1 (SD = 6.6; range 1-25) |
| Self-perceived FNEA intensity |  |
| Mild/Extremely mild | 7 (29.2) |
| Moderate | 8 (33.3) |
| Severe/Extremely severe | 9 (37.5) |
| FNEA in last 4 weeks | Med = 2.5 (IQR = 1.0-15.3; range 0-40) |
| None | 5 (20.8) |
| 1-5 | 10 (41.7) |
| 6+ | 9 (37.5) |
| A&E admission in last 4 weeks | 3 (12.0) |
| Comorbid epilepsy | 9 (36.0) |
| Medication use |  |
| Anti-epileptic | 9 (36.0) |
| Anti-depressant | 17 (68.0) |
| Anti-anxiety | 5 (20.0) |
| Analgesic | 3 (12.0) |
| DES-II | M = 18.7 (SD = 14.3; range = 1.4-65.7) |
| High dissociative (score ≥ 30) | 7 (28.0) |
| M = mean number/score; SD = standard deviation; Med = median; IQR = interquartile range; FNEA = Functional Non-epileptic Attacks; A&E = Accident and Emergency; DES-II = Dissociative Experiences Scale II; Self-perceived FNEA intensity and attack frequency data were not available for 1 patient; Percentages were calculated from samples that included only patients for which data was available. | |

*3.2. Attendance & Outcomes*

Sixteen patients (64.0%) attended all three intervention sessions, while 7 (28.0) attended two sessions. Two patients (7.7%) attended a single session only. Post-treatment data was available for 19 patients: 16 attended three sessions, and 3 attended two sessions. One patient attended a single session in one group, but due to illness completed treatment (attended all 3 sessions) in a subsequent group 3 months later.

Almost 40% (7/18 or 38.9%) of patients were attack-free at the end of treatment, a significant increase from prior to treatment (2/18 or 11.1%; p = 0.032). Further, of those patients experiencing attacks pre-treatment, three-quarters (12/16) reported less frequent attacks during the intervention period. Table 3 shows the mean patient pre- and post-treatment scores on measures of function and belief for patients with post-treatment data. Patients benefitted from the intervention across measured domains, although only differences on the ET7 and the BIPQ were significant. Effect sizes ranged from small (0.22) to medium (0.54) across measures. Post-hoc analyses revealed significant pre- to post-treatment differences on PIBQ items concerning beliefs about how long their illness will continue, level of concerns about illness, and understanding of illness (for comparisons, p < 0.026).

**Table 3**

Mean (SD) scores across functional measures for the FNEA sample (n = 19) at pre- and post-treatment (discharge) and effect size.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Pre-treatment | Post-treatment |  |  |
|  | Mean (SD) | Mean (SD) | *t* | p | *d* |
| **ET7 (0-70)** | **38.94 (18.95)** | **31.70 (18.25)** | **2.42** | **0.028** | **0.38** |
| PHQ-9 (0-27) | 13.68 (8.43) | 11.74 (6.79) | 1.64 | 0.119 | 0.23 |
| GAD-7 (0-21) | 12.32 (6.10) | 10.96 (6.05) | 1.70 | 0.107 | 0.22 |
| **BIPQ (0-10)** | **6.20 (2.23)** | **5.00 (2.13)** | **4.43** | **<0.001** | **0.54** |
| WSAS (0-40) | 16.37 (11.40) | 13.00 (10.38) | 1.71 | 0.105 | 0.30 |
| ET7 = Emotional Thermometer 7; PHQ-9 = Patient Health Questionnaire; GAD-7 = Generalised Anxiety Disorder Scale; BIPQ = Brief Illness Perception Questionnaire; WSAS = Work and Social Adjustment Scale; *d* = Cohen’s *d*: small effect size = 0.2; medium = 0.5; large = 0.8 (Cohen, 1988). Outcome measures showing significant differences are highlighted in bold. | | | | | |

Patients’ increased acceptance and understanding of their FNEA illness at post-treatment was also evident on the separate (non-standardized) items, with a highly significant change in perceived understanding (Table 4). After the group intervention, patients were also less likely to disagree with statements concerning FNEA ‘not affecting my life’ or ‘not scaring me’, although differences failed to achieve statistical significance.

**Table 4**

FNEA patients’ attitudes towards FNEA at pre- and post-treatment (n = 19).

|  |  |  |  |
| --- | --- | --- | --- |
|  | Pre-treatment | Post-treatment |  |
|  | n (%) | n (%) | p |
| Accept FNEA diagnosis | 7 (38.9) | 11 (61.1) | 0.180 |
| Agreement |  |  |  |
| **Understand my FNEA** | **6 (31.6)** | **14 (73.7)** | **0.004** |
| Despite my FNEA, I am able to carry on most of my essential daily activities | 6 (33.3) | 8 (44.4) | 0.250 |
| Disagreement |  |  |  |
| FNEA does not affect my life | 12 (70.6) | 7 (41.2) | 0.070 |
| FNEA does not scare me | 12 (63.2) | 8 (42.1) | 0.125 |
| The n values for each questionnaire item are slightly variable due to a small number of missing responses on some items: percentages were calculated from samples that included only patients for which data was available; The McNemar mid-p test for binary matched-pair data was used for comparisons of proportions at pre- and post-treatment. Outcome measures showing significant differences are highlighted in bold. | | | |

Across all standardized measures, high-dissociating FNEA patients evidenced more impaired function than low dissociators (Table 5). However, magnitude of change over the course of the intervention was largely comparable for low and high dissociator groups, with the possible exception of WSAS where there was a trend for greater improvement in the low dissociative group (small numbers likely preclude significance). Degree of change (as determined by residualised change scores) on each functional measure was also unrelated to both duration of illness (for all measures, p > 0.147) and whether or not comorbid epilepsy was present (p > 0.102).

**Table 5**

Pre- and post-treatment mean (SD) scores across functional measures for the FNEA sample according to level of dissociation at baseline (low n = 12, high n = 7).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Pre-treatment | Post-treatment | Between-group | Group by Treatment |
|  | Mean (SD) | Mean (SD) | p | p |
| ET7 (0-70) |  |  |  |  |
| Low Dissociative | 31.18 (18.47) | 26.44 (17.83) |  |  |
| High Dissociative | 53.17 (9.56) | 41.33 (16.05) | **0.033** | 0.271 |
| PHQ-9 (0-27) |  |  |  |  |
| Low Dissociative | 10.33 (8.30) | 8.83 (5.27) |  |  |
| High Dissociative | 19.43 (4.61) | 16.71 (6.45) | **0.008** | 0.636 |
| GAD-7 (0-21) |  |  |  |  |
| Low Dissociative | 10.17 (6.46) | 9.10 (6.11) |  |  |
| High Dissociative | 16.00 (3.16) | 14.14 (4.74) | **0.046** | 0.649 |
| BIPQ (0-10) |  |  |  |  |
| Low Dissociative | 5.17 (2.14) | 4.21 (2.18) |  |  |
| High Dissociative | 7.96 (0.89) | 6.36 (1.19) | **0.009** | 0.258 |
| WSAS (0-40) |  |  |  |  |
| Low Dissociative | 14.00 (11.62) | 8.00 (7.88) |  |  |
| High Dissociative | 20.43 (10.58) | 21.57 (8.58) | **0.031** | 0.080 |
| ET7 = Emotional Thermometer 7; PHQ-9 = Patient Health Questionnaire; GAD7 = Generalised Anxiety Disorder Scale; BIPQ = Brief Illness Perception Questionnaire; WSAS = Work and Social Adjustment Scale; p values were derived from repeated measures analysis of variance (ANOVA) with Group (Low Dissociative versus High Dissociative) as a between-group factor and treatment (pre- versus post-treatment) as a within-group factor. Significant p values are highlighted in bold. | | | | |

*3.3. Patient Feedback*

There was a high level of satisfaction with the intervention among attendees; all but one patient was either satisfied or highly satisfied with the group intervention (94.7%) and 17 of 18 patients (94.4%) reported that they would likely or very likely recommend the group intervention to friends of family experiencing FNEA. Twelve patients (63.1%) believed the group would improve their quality of life while another 4 (21.1%) were unsure.

Themes were established from the written information gathered on the patient feedback forms. When asked what they found most helpful about attending the group, the most common response concerned learning strategies that they could use after the group had finished. Such strategies included muscle relaxation exercises, grounding strategies and distraction techniques that patients could use to help better manage their symptoms. Patients also revealed that the group setting provided some comfort to help them feel less alone in their condition and gave an insight into the range of people suffering from FNEA, also helping them feel less isolated. One person did comment they found the group setting difficult, but generally the group format was perceived to be positive. Another helpful theme emerging from patients’ responses was the value of a space to talk. Patients commented that they felt this set-up gave them the opportunity to share coping mechanisms and personal experiences with others going through similar situations, in a safe environment. When asked what improvements could be made to the group, patients expressed that they felt they would benefit from future “top up” or “maintenance” group sessions, possibly a few months following the end of the first set of group sessions. Suggestions were also made that if the sessions continued they be longer in duration.

**4. Discussion**

This study suggests that an innovative approach to deliver CBT-based group psychoeducation can be an effective intervention in terms of reducing attack frequency and improving understanding and psychological wellbeing. The proportion of patients experiencing attacks significantly decreased, with almost 40% of patients reporting being attack-free at the end of the group treatment (compared to 11% of completers at the beginning of treatment). Our results are favorable when comparing to previous group psychoeducation studies, as no previous research evaluating group psychoeducation for FNEA reported a significant reduction in attack frequency [6,9]. Significant improvements were also found on a measure of psychological distress (ET7), in line with Conwill and colleagues’ study findings, where significantly improved emotional wellbeing after a psychoeducational intervention was also observed. Although depression and anxiety are common comorbidities [5], non-significant improvements were found on measures of depression and anxiety. This is consistent with previous results from group interventions [6] and individual guided self-help [21], and expected as the treatment was brief and not specifically focused on managing depression or anxiety. Improvements in relation to illness beliefs were observed, in particular on beliefs regarding how long the FNEA will continue, levels of concern, and understanding of the condition. Patients also reported significantly increased understanding of their condition. This, at least in our view, is one of the factors that improves outcomes by ensuring increased acceptance and participation in further treatments offered. Unlike Chen and colleagues, a significant improvement in scores on the WSAS was not found. This may be due to heterogeneity in response, as demonstrated when examining the outcomes for patients according to level of dissociative experiences.

The mean duration of experiencing FNEA for patients attending this group was 7.1 years, with a range of 1-25 years - thus the group did not consist of only newly diagnosed patients. Despite this, no significant associations between degree of change and duration of FNEA were observed. Additionally, the group population was unusual in that we included patients with comorbid epilepsy. There were no differences found in terms of outcomes for those with or without comorbid epilepsy. This suggests that patients with comorbid epilepsy can be included in group interventions targeting FNEA, and still benefit.

The group received positive feedback from attendees, with high satisfaction reported by most of the patients. In terms of the qualitative feedback, patients commented that they particularly appreciated learning strategies to manage their symptoms and meeting other people with the same diagnosis. The group setting was considered to be particularly helpful by patients.

As follow-up data was not collected, it is not possible to know whether attack reduction was maintained over the longer term or whether other patients became attack-free or experienced a reduction in FNEA over time. It has been found that greater acceptance of diagnosis is related to better outcomes. [39] We can hypothesize that greater understanding and acceptance of FNEA and improved wellbeing would lead to a reduction in FNEA with greater engagement with further treatment. However, in approaching treatment of FNEA, desired treatment outcomes should encompass broader measures, such as reduced calls for ambulance, reduced attendance at A&E and improving functioning and quality of life, rather than just focus on reducing fit frequency. If it is possible for somebody to still be experiencing FNEA, but have improved psychological wellbeing and functioning as a result of psychoeducation treatment, this can also be considered a good outcome. We hope to gather broader outcome data in the future.

This is the first study to examine the impact of level of dissociation on CBT-based treatment for FNEA. Previous studies have observed a high prevalence of psychological and somatoform dissociative symptoms in patients with FNEA [40,41], with suggested links between dissociation associated with FNEA and neurophysiological abnormalities [42]. Further, one study reported a strong negative association between the severity of dissociative experiences in patients with non-epileptic attack disorder and their quality of life [41]. Consistent with this finding, the high dissociative group in the present study had significantly elevated scores on all standardized measures compared with the low dissociative group, suggesting that those FNEA patients who experienced high dissociation had lower functioning and experienced greater mental health difficulties. Elevated levels of dissociation in FNEA patients have also been associated with higher rates of traumatic experiences [40]. As our research did not specifically assess trauma history or symptoms of post-traumatic stress disorder (PTSD), it is not possible to confirm this relationship. Importantly, however, we found no significant differences in terms of the level of (mean) improvements on the standardized measures of mood, illness perception and general functioning according to level of dissociation, indicating the psychoeducation intervention has the potential to benefit FNEA patients irrespective of level of dissociative experiences.

It should be noted that dissociation can be difficult to measure, and it is not clear to what extent the DES-II is sensitive and specific enough to measure the dissociation that may be involved in FNEA [43], and it does not measure somatoform dissociation [19,44]. Nevertheless, the measure did capture the group of patients who had higher level of dissociation and were more impaired in their presentation. Severity of dissociation did not have a significant impact on treatment outcome, and this suggests that even patients who experience high level of dissociation can benefit from a psychoeducation CBT-based group. Examining treatment effects on sub-sections of the FNEA population is important, as it has been proposed by several researchers that patients with FNEA are a heterogeneous group [15,16,45,46], who may need different targeted interventions [22,40].

As noted above, the lack of follow-up data is a limitation of this study and it remains unclear whether or not observed benefits from the intervention were maintained over the longer term. Additionally, the sample size was small, which may have contributed to the inability to detect statistically significant effects on some outcomes, and there was no correction for multiple pre-/post-treatment comparisons, raising the risk of Type I errors Third, as the design was not a RCT and no control, comparison groups, or random assignment of patients were included, it cannot be assumed that observed changes were due to the effect of the psychoeducation group alone.

Despite these limitations, the results suggest that a CBT-based psychoeducation group can be a useful part of the pathway in the treatment of FNEA of all severity and duration including ones with comorbid epilepsy [22]. The treatment was well-tolerated by the patient group, which included patients with long-established FNEA and high dissociative levels, and resulted in improved wellbeing, understanding and acceptance of FNEA. We suggest this intervention could be provided as a first line treatment, followed by targeted individualized treatment for people who have not shown sufficient improvement. Further treatment could focus on specific issues such as level of dissociation, past trauma or other associated psychopathology relevant to FNEA. Controlled studies with larger sample sizes and follow-up analysis would provide further evidence of brief CBT-based group therapy as a treatment option for FNEA.

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