Evaluating the **PCL-C** as a measure of **post-traumatic symptoms** in patients with Functional Neurological Symptom Disorder (**FNSD**)

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Background

Defined as distressing neurological symptoms that cannot be attributed to structural or physiological changes[1], patients with FNSD make up 16% of all neurology referrals[2], and experience significant reductions in health-related quality of life (HRQoL)[3].

Historically trauma was considered an essential aetiological factor, but the precise contribution of trauma to the disorder remains controversial.

The Post-traumatic Checklist-civilian version (PCL-C) is a self-reported screening tool for post-traumatic symptoms, mirroring symptom clusters in the DSM-IV criteria for **PTSD**.

A previous study[4] in patients with FNSD demonstrated high scores on the PCL-C.

However strong correlations with other psychological co-morbidities raised the possibility that the PCL-C may be capturing non-specific distress rather than indicators of previous traumatisation.

Aims

This study aimed to determine whether:

(i) The PCL-C distinguishes trauma-memory-related symptoms from non-specific symptoms of distress

(ii) These symptom clusters correlate with other psychopathology and HRQoL measures

(iii) These symptom clusters change with psychotherapy

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Methods

Recruitment and Measures

This retrospective service evaluation used data from **472** patients with a diagnosis of FNSD commencing psychotherapy. Patients completed pre-therapy questionnaires, which quantified symptoms of depression (**PHQ-9**), anxiety (**GAD-7**) and somatization (**PHQ-15**), as well as impairment (**WSAS**), HRQoL (**SF-36**) and post-traumatic symptoms (**PCL-C**).

Of these patients, **208** also filled the same questionnaires upon completion of therapy.

Statistical Analysis

A factor analysis of PCL-C responses was performed to determine the latent factors. Relationships between PCL-C factors and measure of comorbidities and HRQoL were assessed using regression analysis. Changes in mean pre and post therapy scores were tested for significance and effect sizes were calculated.

Results

Factor Analysis

The most convincing model consisted of two factors and explained 63% of the variance. The first factor explained 55.2% of the variance was termed '**intrusive symptoms**'. The second factor explained 7.8% of the variance and was termed '**emotional dysregulation**' (table 1).

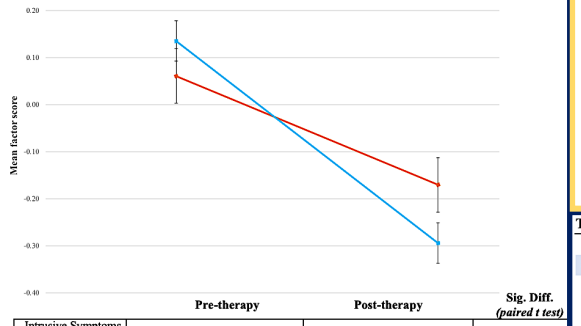
Pre-and post-therapy comparisons

- Both factors significantly reduced in severity post-therapy, although factor 2 reduced by a greater degree (**fig. 1**).
- Factor 2 had a greater correlation with depression and mental HRQoL than Factor 1 (**table 2**).
- Changes in depression, anxiety, somatic symptoms and mental HRQoL were associated with 61.9% of the change in factor 2 symptoms, compared to 49.2% for factor 1 symptoms (**table 2**). Changes in mental HRQoL were associated with changes in factor 2, but not factor 1. Neither factor was associated with changes in physical HRQoL (**table 3**).

Table 1 Final latent factor model: summary and sample questions

Factor name	No of items loading onto factor	Item numbers loading onto factors	Typical items	Contribution to Variance
Intrusive symptoms	9	1-7 16-17	Q1: Repeated, *disturbing memories, thoughts or images* of a stressful experience from the past? Q6: Avoid *thinking about or talking about* a stressful experience from the past or avoid *having feelings* related to it? Q16: Being '*super alert*' or watchful on guard?	55.2%
Emotional dysregulation	7	9-15	Q9: Loss of *interest in things that you used to enjoy?* Q11: Feeling *emotionally numb* or being unable to have love feelings for those close to you? Q14: Feeling *irritable* or having *angry outbursts?*	7.8%

Figure 1 Self-reported change in mean factor scores before and after therapy *(n = 208)*



	Pre-therapy	Post-therapy	Sig. Diff. *(paired t test)*
Intrusive Symptoms	0.06	0.14	p < 0.001
Emotional Dysregulation	-0.17	-0.29	p < 0.001

Table 2 Multiple linear regression for variables predicting change in Factors 1 & 2

	B	*β*	R^2
Factor 1 (Intrusive symptoms)			
PHQ-9	0.033	0.266**	0.492
GAD-7	0.036	0.258*	
PHQ-15	0.028	0.169**	
SF36-MCS	-0.008	-0.157*	
Factor 2 (Emotional dysregulation)			
PHQ-9	0.043	0.342**	0.619
GAD-7	0.030	0.204*	
PHQ-15	0.028	0.159*	
SF36-MCS	-0.011	-0.198**	

*p ≤ 0.05**
*p ≤ 0.001***
NB. Only variables with a significant contribution to the regression equation are shown here

Discussion

The PCL-C measured **two** correlated but distinct clusters:

- **Intrusive symptoms,** including distressing dreams, flashbacks and hypervigilance, have been well-characterised in PTSD patients.
- **Emotional dysregulation** included loss of interest, difficulties in sleeping and concentrating, and irritability. Collectively described as 'dysphoria' symptoms elsewhere[5], these were more strongly associated with depression and mental HRQoL. Thus, emotional dysregulation may be more reactive and less specific for previous traumatisation.

- The greater reduction in emotional dysregulation symptoms compared to intrusive symptoms resonates with findings from the recent **2020 CODES trial[6]**, that suggested therapy improved secondary outcomes (e.g. HRQoL) by reducing comorbidities, rather than treating the primary disorder (i.e., reducing seizure frequency).
- Although there is insufficient exploration of intrusive symptoms in FNSD patients in previous studies, the fact that intrusive symptoms explained a significant proportion of the variance in PCL-C responses suggest that trauma-specific symptoms are indeed elevated in FNSD patients at a group level.

Table 3 Multiple linear regression for variables predicting change in HRQoL (SF36)

	B	*β*	R^2
SF36 –MCS (*Mental Component Score*)			
Factor 1	-0.484	-0.025	0.470
Factor 2	-4.789	-0.258*	
PHQ-9	-0.574	-0.243*	
PHQ-15	-0.483	-0.150	
WSAS	-0.243	-0.181*	
SF36 - MCS	-	-	
SF36 - PCS	-0.552	-0.395**	
Age	0.050	0.045	
Gender	4.072	0.114*	
SF36 –PCS (*Physical Component Score*)			
Factor 1	1.483	0.108	0.353
Factor 2	-1.938	-0.146	
PHQ-9	-0.434	-0.257*	
PHQ-15	-0.487	-0.211*	
WSAS	-0.235	-0.244**	
SF36 - MCS	-0.344	-0.481**	
SF36 - PCS	-	-	
Age	0.095	0.119*	
Gender	2.715	0.106	

*p ≤ 0.05**
*p ≤ 0.001***
NB. Only relevant variables (i.e., factors 1 & 2, and those with a significant contribution to the regression equation) are shown here

Conclusion

Whilst we cannot conclude that traumatisation is the primary aetiological factor in the development of FNSD on an individual basis, our findings support the role of trauma as an important aetiological factor and contributor to symptoms.