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COORDINATOR Prof. Luciano Fadiga

PSYCHOPATHOLOGY, ILLNESS REPRESENTATION AND PATTERNS OF HEALTHCARE UTILIZATION IN FUNCTIONAL NEUROLOGIC DISORDERS: SIGNIFICANT FACTORS FOR CONSULTATION-LIAISON PSYCHIATRY AND PSYCHIATRIC REHABILITATION

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Candidate
Dott. Zerbinati Luigi

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(signature)

Supervisor
Prof. Grassi Luigi

_____
(signature)

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Abstract

Background: Functional neurological disorders (FNDs), also known as conversion disorder (CD), are a group of conditions that are characterized by neurological symptoms that are not caused by an underlying neurological disease or structural abnormality. These conditions are characterized by high symptom burden, low quality of life and high healthcare utilization.

Methods: 48 patients with an established diagnosis of FND referred for psychiatric evaluation were recruited and assessed using the Brief Symptom Inventory-53 (BSI-53), Scale for Suicide Ideation (SSI), Toronto Alexithymia Scale (TAS), Adult Attachment Style (ASQ), Childhood Trauma Questionnaire (CTQ), Brief Illness Perception Questionnaire (BIPQ), Short Form-12 Health Survey (SF-12), Life Event Checklist and Fatigue Severity Scale (FSS). Patients also underwent the Structured Clinical Interview for the DSM-5 Alternative Model for Personality Disorders (SCID-5-AMPD) Module I. Data regarding emergency department (ED) accesses, specialist medical visits and instrumental examinations during the previous year and, for 26 patients, at 1 year follow up, were recorded using electronic databases.

Results: high ED users at 1 follow up displayed worse functioning in personality domains and higher levels of suicidality. Specific illness beliefs at baseline were found to be associated with patterns of healthcare utilization at follow up. About a third (29.2%) of the patients was affected by active psychopathological symptoms and 12% were considered at risk of suicide. A significant number of patients (42.6%) had a history of severe childhood abuse.

Conclusions: healthcare utilization in FND patients is influenced by illness beliefs and impairments in personality functioning. The data presented here confirm the importance of a comprehensive evaluation by the mental health professional who should not underrate the role of personological dimensions.

1. Introduction

Functional neurological disorders (FNDs), also known as conversion disorder (CD), are a group of conditions that are characterized by neurological symptoms that are not caused by an underlying neurological disease or structural abnormality. Instead, these symptoms are thought to arise from complex dysfunctional neural circuits where psychological factors, such as impaired emotional processing and dissociation, might play an important role (Drane et al., 2020). FNDs can present in a variety of ways, including weakness or paralysis, abnormal movements, sensory disturbances, speech problems, and seizures. There are in fact several subtypes of FNDs, including motor disorders (such as functional movement disorders), sensory disorders (such as functional sensory loss), and seizures (such as psychogenic nonepileptic seizures, PNES).
FNDs are relatively common, especially in neurologic outpatient settings where they represent the second commonest reason for neurologic referral after headache (J Stone et al., 2010). Conservative estimates of incidence are 12 per 100,000 per year, while the prevalence of FNDs is estimated around 50/100 000; these rates, though, vary depending on the population being studied and the methods used to identify them (A Carson & Lehn, 2016). FNDs are more common in women than men, with a female-to-male ratio around 3:1 and have a typical onset in adolescence or early adulthood, but they can occur at any age (Bennett et al., 2021).

There is evidence to suggest that certain predisposing factors may increase the risk of developing FNDs. These factors include a history of trauma, childhood adversity, and certain personality traits, such as alexithymia, high harm avoidance and insecure attachment styles (Van der Feltz-Cornelis, Allen, & Van Eck van der Sluijs, 2020; Williams, Ospina, Jalilianhasanpour, Fricchione, & Perez, 2018). Many studies have also reported an association between FNDs and psychiatric comorbidities, such as anxiety, depression, PTSD and personality disorders (Patron, Rustomji, Yip, & Jenkins, 2022).

FNDs can significantly impact the quality of life of those affected. Patients with FNDs may experience functional impairment in their daily activities, including work and social relationships. Studies have shown that the quality of life of patients with FNDs is significantly lower than that of healthy controls, with comparable disability to the equivalent “organic” neurologic disorder but higher rates of symptom burden and psychological distress (Anderson et al., 2007; A. J. Carson et al., 2000; Alan Carson et al., 2011). Patients also often experience emotional distress, including anxiety, depression, and other somatic symptoms; psychopathology is in fact highly present in these patients, with prevalence rates ranging from 51% to 95% according to different studies (Patron et al., 2022). Furthermore, patients with FNDs may experience stigma and negative attitudes from healthcare professionals and the general public, which can further exacerbate their symptoms and lead to further distress (MacDuffie et al., 2020).

The diagnosis of FNDs can be challenging, as symptoms can be similar to those of neurological diseases. However, a thorough neurological examination and diagnostic tests can often rule out an underlying neurological condition. A diagnosis of FNDs typically requires the presence of certain features, including the absence of an identifiable neurological disease and, most importantly, the clinical characteristic criteria of inconsistency and incongruence (Hess, Espay, & Okun, 2022). While the last implicates *variability* (in frequency, amplitude, distribution, or severity of the symptoms) and *distractibility* (such as suppression or even synchronization of the movement with complex tasks, like finger tapping), the latter refers to the fact that symptoms are not in keeping with known manifestations of other neurological disorders or are not explainable by known

neuroanatomic pathways. Thus, as DSM-5 clearly indicates, the diagnosis of FND is not one of exclusion and can be made in individuals who also have an organic neurological diseases (like epilepsy or multiple sclerosis); furthermore, it clearly indicates that: *"The diagnosis should not be made simply because results from investigations are normal or because the symptom is bizarre. Internal inconsistency during examination is one way to demonstrate incompatibility (i.e., demonstrating that physical signs elicited through one examination method are no longer present when tested a different way)"* and highlights the importance of "positive neurological signs" (American Psychiatric Association, 2013; Daum, Hubschmid, & Aybek, 2014). Further adding complexity to the different scenarios is the fact that a significant proportion of these patients (up to 20%) are also affected by comorbid "organic" neurologic disorders (Tinazzi, Geroin, et al., 2021). Probably reflecting both a fragmentations of care and the complexity in management of patients, the diagnosis of FND is often delayed, with poorer outcome in terms of both prognosis and healthcare costs (Grewal & Cios, 2016; Tinazzi, Gandolfi, Landi, & Leardini, 2021). Healthcare utilization in conversion disorder can be high, with frequent visits to emergency departments (ED) and specialty clinics. A recent nationwide economic evaluation using large US health care databases found that ED costs are comparable to those of refractory epilepsy, while the total charges to the US healthcare system are similar to those of neurological conditions that require high health care resource use (Stephen, Fung, Lungu, & Espay, 2021).

There are several factors that contribute to high healthcare utilization in conversion disorder. One factor is the complexity of the disorder. Conversion disorder is often associated with multiple physical symptoms that can be difficult to diagnose and manage. Healthcare providers may order multiple tests and refer patients to multiple specialists in an attempt to identify the underlying cause of the symptoms. Barsky et al. for example found that compared with patients suffering from organic disorders, FND patients had more primary care appointments, more specialty visits, more emergency department accesses, more hospitalizations, and higher inpatient as well as outpatient costs (Barsky, Orav, & Bates, 2005). Further evidence come from the literature about "medically unexplained symptoms" (MUS): patients with these conditions often present with vague and difficult to identify symptoms leading to detrimental economical effects (Konnopka et al., 2012); the annual medical costs for "somatizers" have indeed been found to be 2.3 times that for a 'non-somatizer', with 3 times as many hospitalizations (Barsky et al., 2005).

A second reason for increased costs in this population might be related to iatrogenic harm. Harm caused by medical treatment is indeed a potential concern for patients with FND. Misdiagnosis, inappropriate diagnostic testing, and unnecessary treatments can worsen patients' symptoms and lead to unnecessary risks and complications. For example, patients with PNES who were misdiagnosed with epilepsy and treated with antiepileptic medications had worse outcomes compared to those who received appropriate diagnosis and treatment as, besides the harmful side effects of antiepileptic medications, these drugs seem to worsen the disorder itself (Anzellotti et al., 2014; Duncan, 2006; Garekar & Dhiman, 2015; Niedermeyer, Blumer, Holscher, & Walker, 1970). Additionally, compared to patients suffering from epilepsy, patients with PNES have been found to be treated more often in intensive care (Reuber, House, Pukrop, Bauer, & Elger, 2003); misdiagnosis and treatment of PNES as status epilepticus is in fact a common and widespread problem with deleterious consequences (Jungilligens, Michaelis, & Popkirov, 2021) such as intubation (Viarasilpa et al., 2020).

Eventually, the contribution to healthcare costs might derive from the effects of specific psychosocial variables, common in FNDs, such as psychopathology, dysfunctional illness beliefs, alexithymia, insecure attachment style and history of trauma, that are associated with illness behaviors. Psychopathological symptoms are a known contributor to healthcare utilization.

Individuals with mental health disorders often experience physical comorbidities, poor self-management of health conditions, and barriers to accessing healthcare services, leading to increased healthcare utilization (Chang et al., 2011; Katon, 2011). Roughly 50% of frequent emergency department users have a mental health diagnosis (Hunt, Weber, Showstack, Colby, & Callaham, 2006) and patients with mood disorders have been found to carry a threefold risk of frequency emergency department use (Fehlmann, Miron-Celis, Chen, Perry, & Eagles, 2022). Illness beliefs can also influence healthcare utilization by affecting an individual's willingness to seek medical care, adherence to treatment recommendations, and use of alternative therapies. A number of studies have found that negative illness beliefs, such as a belief in a severe and uncontrollable illness, are associated with increased healthcare utilization, including more frequent outpatient visits, hospitalizations, and emergency department visits (Ninou et al., 2016; Sharpe et al., 2010). Higher levels of alexithymia are associated with greater healthcare system utilization; in particular, difficulty in identifying feelings was linked to increased use of outpatient treatment, even after controlling for potential mediators such as insurance status, depression, and somatic complaints (M A Lumley & Norman, 1996). Moreover, individuals with marked alexithymic traits have been found to report more symptoms than those with lower alexithymic traits (Mark A Lumley, Neely, & Burger, 2007). Thus, alexithymia may be a risk factor for excessive healthcare utilization, possibly due to the difficulties in recognizing and managing emotional distress that can contribute to physical symptoms requiring medical attention. Patients who suffers from unexplained physical symptoms have been found 2.47 times more likely to have insecure attachment (Taylor, Mann, White, & Goldberg, 2000). Insecure attachment in adulthood is associated with higher symptom reporting, worse quality of life (Adshead & Guthrie, 2015) and, in patients affected by MUS, with more primary care visits (Taylor, Marshall, Mann, & Goldberg, 2012). With this framework in mind, Taylor et al. have conceptualized frequent attender behavior in MUS as a pathological care-seeking behavior linked to their insecure attachment, while Adshead & Guthrie saw attachment as a mediator between childhood trauma and MUS in adulthood through its effect on relationships with healthcare professionals from whom the person has to elicit care (i.e. the repetition of an insecure attachment pattern leading to dysfunctional relationships with healthcare professionals that influence illness management and treatment adherence). Eventually, childhood trauma, such as physical, emotional, sexual abuse or neglect, has been associated with increased healthcare utilization in adulthood. The link between childhood trauma and increased healthcare utilization may be explained by several factors: 1) childhood trauma can lead to the development of chronic health conditions, such as chronic pain, autoimmune disorders, and cardiovascular disease, which require frequent medical care; 2) individuals who experience childhood trauma may have poorer mental health outcomes, such as depression and anxiety, which have been associated with increased healthcare utilization; 3) childhood trauma can also affect health behaviors, such as substance use and poor diet, which can contribute to chronic health conditions and increased healthcare utilization (Hargreaves, Mouton, Liu, Zhou, & Blot, 2019; Koball et al., 2021, 2019).

With this background in mind, the aim of this study was: 1) to study the prevalence of psychopathology, adverse childhood experiences, alexithymia and insecure attachment in a sample of patients affected by FND; 2) to identify the interplay between the variables of interest and specific health related outcomes, namely quality of life, ED accesses, number of instrumental examinations and number of specialist medical visits; 3) to identify the psychosocial characteristics of a subgroup of patients identified as high ED users.

2.0 Methods

This pilot follow up study involved 48 patients with an established diagnosis of FND referred for psychiatric evaluation. Participants were recruited from the Sant'Anna University Hospital in Ferrara, Italy, from January 2020 to December 2022. Patients were referred from either the neurology ward, neurology outpatient clinics or general hospital wards as part of routine Consultation Liaison Psychiatry activity in the general hospital; alternatively, they were contacted via telephone by the principal investigator few days after accessing the emergency department (ED) to arrange an appointment for assessment. After providing written informed consent, all patients received a comprehensive bio-psycho-social evaluation by a psychiatrist with particular experience in psychosomatic medicine; they were assessed with self-report questionnaires and they underwent the Structured Clinical Interview for the DSM-5 Alternative Model for Personality Disorders (SCID-5-AMPD) Module I (Level of Personality Functioning Scale). Measures of healthcare utilization, comprising the number of ED visits, days of hospitalization and specialist medical visits were tracked at one year follow up (T1) by using local electronic medical records; the same healthcare utilization measures were use to determine health service resources used in the year preceding the assessment (T-1). High ED users were defined, according with previous literature, as those making 3+ visits/year (Brennan, Chan, Hsia, Wilson, & Castillo, 2014; LaCalle & Rabin, 2010).

After assessment, patients were directed either to multidisciplinary care or to other forms of specialized care such as psychiatric outpatients services or physiotherapy.

2.1 Inclusion criteria

Patients were eligible according to the following criteria: (1) aged 18 or older; (2) able to participate in the clinical interview or to fill self-report questionnaire; (3) absence of delirium and/or cognitive impairments; (4) fluent in the Italian language; (5) an established diagnosis of FND based on the following criteria:

- For motor type: Gupta and Lang's criteria (Gupta & Lang, 2009) in conjunction with the presence of distractibility maneuvers and demonstration of positive signs (Espay et al., 2018)
- For psychogenic non-epileptic seizures type: presence of typical attacks, either spontaneous or provoked, recorded with video electroencephalogram (video EEG) in the context of negative ictal EEG (Labate et al., 2012; Lancman, Asconapé, Craven, Howard, & Penry, 1994)
- For persistent dizziness: meeting the diagnostic criteria for Persistent Postural Perceptual Dizziness (PPPD) according to ICD-11 ("ICD-11 for Mortality and Morbidity Statistics (Version 04/2019). AB32.0 Persistent Postural-Perceptual Dizziness," n.d.)
- For all the remaining clinical presentations and for all patients in general: FND diagnosis delivered in conjunction with a neurologist by meeting the diagnostic criteria of DSM-5 (American Psychiatric Association, 2013)

2.2 Psychiatric consultation and assessment

Socio-demographic, and clinical variables were collected during the visit and comprised: present and past medical history, past psychiatric history, past psychiatric hospitalizations, current or psychiatric symptoms, use of alcohol or substances, past functional neurologic presentations, symptoms quality, duration and onset. During the visit patients received an explanation of the diagnosis and some form of psycho-education about the disorder. In accordance with previous literature, explanation about the diagnosis was used as an initial form of treatment itself and comprised the demonstration of positive signs, the role of suggestion and distractibility (J Stone, Carson, & Hallett, 2016). When addressing the role of psychological factors and stress, the explanation was given in a neutral way, acknowledging their possible role in the predisposition, precipitation and maintenance of the disease but not limiting the explanation to only those factors.

2.2.1 Psychopathology and suicidal ideation

The presence of clinical psychopathology was inquired as part of the visit and was completed by using the following instruments:

- The Brief Symptom Inventory (BSI-53), a 53 items questionnaire assessing the intensity of psychological symptoms during the past 7 days (Derogatis, 1993). Responses, rated on a 5 point Likert scale (from 0= not at all to 4=extremely) are summed up in order to provide the following symptom scales: Depression, Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism. It is possible to score a global index (the global severity index [GSI]), which reflects both the number and severity of all items endorsed. Patients are considered "cases" when they either show 1) a GSI T score ≥ 65 or 2) two subscales with a T score ≥ 65.

- Scale for Suicide Ideation (SSI), a semi structure interview assessing the he intensity, pervasiveness, and characteristics of suicidal ideation in adults (Beck, Kovacs, & Weissman, 1979). Scores range from 0 to 38 with patients scoring ≥ 5 being considered at risk of suicide

2.2.2 Stressful life events, childhood traumas, alexithymia and attachment styles

After the visit, patients previous stressful life events, attachment styles and alexithymia were assessed by asking patients to fill the following questionnaires:

- The Life Events Checklist (LEC), a tool designed to assess the presence of life events. Even when used alone, it showed good psychometric properties (Gray, Litz, Hsu, & Lombardo, 2005)

- The Childhood Trauma Questionnaire – Short Form (CTQ-SF), a 25 item self-report tool designed to asses childhood traumatic experiences (Bernstein et al., 2003). Responses, rated on a 5 point Likert scale (ranging from 1=never true to 5=often true) are summed up in order to provide the following subscales: Emotional Abuse, Physical Abuse, Sexual Abuse, Emotional Neglect and Physical Neglect. A cut-off ≥ 13 in the Emotional Abuse subscale, ≥ 10 in the Physical Abuse

subscale, ≥ 8 in the Sexual Abuse subscale , ≥15 in the Emotional Neglect subscale and ≥10 in the Physical Neglect are used to determine the presence of a severe form of childhood abuse.

- The Attachment Style Questionnaire (ASQ), a 40 items self report tool used to assess on a 6 point Likert scale (from 1=totally disagree to 6= totally agree) the essential dimensions of attachment (Feeney, Noller, & Hanrahan, 1994). It comprises 5 subscales: Confidence, Discomfort with Closeness, Need for Approval, Preoccupation with Relationships, and Relationships as Secondary

- The Toronto Alexithymia Scale (TAS) a 20 items self-report questionnaire that measures difficulty in identifying and describing emotions (Kooiman, Spinhoven, & Trijsburg, 2002). Items are rated using a 5-point Likert scale (1=strongly disagree to 5=strongly agree) and it comprises 3 subscales: Difficulty Describing Feelings, Difficulty Identifying Feeling and Externally-Oriented Thinking. A score ≤ 51 is indicative of non-alexithymia, while a cutoff ≥ 61 is used to determine the presence of alexithymia. Scores between 52 and 60 are indicative of possible alexithymia

2.2.3 Illness perception, illness beliefs and patient satisfaction

Illness perception, illness beliefs, patient's satisfaction and experiences with doctors were assessed with the following instruments:

- The Brief Illness Perception Questionnaire (BIPQ) is a self-report tool consisting of 8 items that represent the following 8 corresponding dimensions of the construct: 1) Consequences, that is the expected repercussion and outcome of the illness; 2) Timeline, namely how long the patient believes the illness will persist; 3) Personal control, namely the degree of recovery to which the patient believes he can attain (or the extent of control of the illness he can attain); 4) Treatment control, namely the expected effects of treatments; 5) Symptoms, namely the intensity of the symptoms of the disease; 6) Concern, namely the extent of the apprehension derived from the illness; 7) Coherence, namely the extent to which the patient believes he is able to understand the disease; 8) Emotional response, namely the degree and intensity of negative reactions such as fear, anger, and distress derived from the illness. Patients answer these items using a Likert scale from 0 to 10, comprising the total score from 0 to 80. The cognitive component of BIPQ was computed according to literature by summing scores of items 1–5 and the emotional component by summing scores of items 5–8.

- Five visual analogue scales were used to assess specific beliefs relevant for FND: "How much do you think your problem may be due to: 1) a difficult to find damage to your nervous system; 2) a pathology related to another system; 3) a very rare or mysterious disease; 4) stress or worries; 5) emotions that are difficult to manage". Each response ranged from 0=minimum probability to 10= maximum probability

- Four analogue scales were used to assess patients satisfaction and other relevant beliefs: "From 0=minimum degree to 10=maximum degree, how much do you feel: 1) understood by doctors and healthcare professionals; 2) to have received a correct diagnosis; 3) satisfied by treatments received; 4) to be able to get better or cured

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2.2.4 Quality of life and fatigue

Quality of life was assessed with the Italian version of Short Form-12 (SF-12), a self report tool which provides summary scores of physical (physical functioning component score, PCS-12) and mental health (mental functioning component score, MCS-12)(Apolone et al., 2001). Fatigue, a relevant symptom in FND, was assessed with the Fatigue Severity Scale (Krupp, LaRocca, Muir-Nash, & Steinberg, 1989), a widely used 9 item self-report tool designed to evaluate the presence of this symptom; a cut-off of ≥36 is used to indicate the presence of clinically relevant fatigue.

2.2.5 Personality functioning

Personality functioning was assessed using the Structured Clinical Interview for the DSM-5 Alternative Model for Personality Disorders (SCID-5-AMPD) Module I (Level of Personality Functioning Scale) (First MB, Skodol AE, Bender DS, 2018). The aim of this tool is to assess the presence and general severity of personality pathology by delineating five levels of impairment of personality functioning, ranging from little or no impairment (Level 0) to extreme impairment of personality functioning (Level 4). The interview covers 4 areas relating to self- and interpersonal functioning that is, 1) Identity, 2) Self-direction, 3) Empathy, and 4) Intimacy, each of which contains three narrower indicators. For each dimension, the interviewer is asked to rate the level of impairment (from 0=little or no impairment to 4=extreme impairment) and a total score of personality impairment can be computed by taking the average of these scores .

2.3 Statistical analysis

Descriptive analysis were run using the Statistical Package for Social Sciences (SPSS) version 22. All continuous variables were expressed as mean ± standard deviation. Analysis of variance, Student's t test, and chi-square test were used to find differences in the variables of interest between groups. All tests were two-tailed, with alpha set at $p < .05$. Pearson's correlation was performed to assesses association between the variables. To aid visual comparisons, appropriate figures and graphs were created using *ggplot* R package.

3. Results

A total of 49 patients were enrolled in this study, of whom 4 were excluded from healthcare utilization analyses because they did not reside in the Ferrara province. One patient, initially described as affected by FND, later developed an actual organic disorder diagnosed as "atypical parkinsonism" and partially responded to levodopa treatment; although the symptoms he experienced could not be fully understood as part of an organic disorder, a definite diagnosis of FND could not be made (i.e. some symptoms cold be labeled as "probably functional") and was thus excluded from analyses.

3.1 Sample characteristics

The final sample consisted of 48 patients with a mean age of 46.7 (± 5.4 years) (**Table 1**). Most of the patients were of Italian origin (91.7%), females (66.7%), with a high school education degree (48.9%), married (58.3%) and currently working (60.4%). Median time of duration of symptom was 1 year (IQR=6-0). Functional weakness/limb paralysis was the most common presentation (31.3%), followed by functional motor disorder (functional tremor/myoclonus/dystonia, 25.0%) and nonepileptic dissociative attacks (16.7%). The majority of patients (70.8%) reported more than one functional neurological symptoms with a mean of 2.65 ± 1.60 symptoms per patient (FNS-Total). The onset of symptoms was sudden (minutes or seconds) in most of the cases (52.1%), associated with headache (27.1%), panic-like symptoms (22.9%), trauma, pain or a medical illness (20.8%); patients also reported significant environmental related stress (20.8%), derealization/depersonalization symptoms (16.7%) and interpersonal disputes (16.7%) immediately before or during the onset of symptoms. Most of the participants (64.6%) had a positive history for past functional neurologic disorders (i.e. a previous episode of conversion disorder): functional weakness/limb paralysis was the most frequent symptom (27.1%), followed by functional sensory symptoms (18.8%) and functional motor disorder (16.7%). The largest portion of the participants (72.9%) was affected by other functional disorders, with functional gastrointestinal disorders being the most represented (43.8%), followed by noncardiac chest pain (37.5%), functional respiratory disorders (22.9%) and fibromyalgia (10.4%), reporting a mean of 1.72 ± 1.51 functional symptoms other than neurologic (FNNS-Total) each. Only a minority of patients (20.8%) was receiving a disability allowance and just one patient (2.1%) was involved in medico-legal conflicts. *Le belle indifférénce* was not seen in any of the cases. About a third of patients (27.1%) was also affected by another neurologic condition, while most of the patients (83%) were also affected by another medical condition: 7 patients (14.5%) had a past history of stroke or transient ischemic attack, 5 (10.6%) were affected by peripheral neuropathies, 1 patient (2%) was affected by multiple sclerosis, 1 patient (2%) had a diagnosis of "suspected parkinsonism". Median CCI was 1.5 (IQR=0.75-3).

Table 1. Socio-demographic and clinical characteristics of the sample.

Socio-demographic characteristics		Clinical characteristics	
Sex		Past history of FND	
Male	16 (33.3%)	Yes	31 (64.6%)
Female	32 (66.7%)	No	17 (35.4%)
Age	46.7 ± 5.4	Duration of the disorder (y)	IQR= 6-0
Education		Type of disorder	
Elementary School	2 (4.3%)	Motor	12 (25.0%)
Middle School	11 (23.4%))	PNES	8 (16.7%)
High School	23 (48.9%)	Functional Weakness/Limb paralysis	15 (31.3%)
Bachelor's Degree	10 (21.3%)	Sensory Type	4 (8.3%
Upper education or PhD	1 (2.1%)	Visual	1 (2.1%)
Family Status		Dizziness	2 (4.2%)
Unmarried	9 (18.8%)	Memory	1 (2.1%)
Married	28 (58.3%)	Swallow	3 (6.3%)
Widowed	2 (4.2%)	Other	2 (4.2%)
Divorced	9 (18.8%)	CCI	2.02 ± 1.91
Working Status		FNS-Total	2.64 ± 1.60
Occupied	29 (60.4%)	FNNS-Total	1.72 ± 1.51
Retired	6 (12.5%)	Positive past psychiatric history	24 (51.1%)
Unemployed	6 (12.5%)	Previous psychiatric hospitalizations	5 (10.6%)
Housewife	2 (4.2%)	Positive family history for psychiatric disorders	17 (35.4%)
Student	3 (6.3%)	Previous suicide attempts	3 (6.2%)
Other	2 (4.2%)		

FND= Functional Neurological Disorder; PNES= psychogenic non-epileptic seizure; CCI= Charlson Comorbidity Index; FNS-Total= total number of functional neurological symptoms; FNNS-Total= Total number of non neurological functional symptoms.

3.2 Psychopathology and suicide ideation

Of the total sample, 24 (51.1%) reported a positive past psychiatric history, 5 (10.6%) previous psychiatric hospitalizations and 17 (35.4%) a positive family history for psychiatric disorders; 3 patients (6.2%) reported an unsuccessful suicide attempt in the past. The most frequent diagnoses patients received were anxiety disorders (36.2%) and depressive disorder (19.1%), while only a minority of patients had received a diagnosis of personality disorder (4.3%) and Eating Disorder (8.5%). Fourteen patients (29.2%) were considered BSI-53 "cases" (i.e. displaying significant levels of psychopathology). Psychoticism was the most frequent "case" subscale (20.8%), followed by Depression (16.7%), Obsessivity (16.7%) and Hostility (16.7%). No differences were found in any of the BSI-53 subscales scores as well as in the SSI total score according to sex, profession or type of disorder (all $p>0.05$). Patients with a past history of FND displayed higher levels of Anxiety ($t=-2.52$, $p<0.05$), Hostility ($t=-2.64$, $p<0.05$), Psychoticism ($t=-2.23$, $p<0.05$) and GSI-Total (**Table 2**).

Table 2. Psychopathological levels and comparison between groups

	"Case" (%)	Positive history of previous FND (n=31)	Negative history of previous FND (n=17)	Statistics
Somatization	7 (14.%)	51.88 ± 10.34	46.73 ± 8.96	t=-1.72, df=46, p>0.05
Obsessivity	8 (16.7%)	51.64 ± 10.64	47.42 ± 8.47	t=-1.40, df=46, p>0.05
Interpersonal Sensitivity	7 (14.6%)	51.15 ± 10.37	48.29 ± 9.46	t=-0.94, df=46, p>0.05
Depression	8 (16.7%)	51.23 ± 10.83	48.30 ± 8.26	t=-0.97, df=46, p>0.05
Anxiety	6 (12.5%)	**52.47 ± 10.96**	**46.21 ± 6.16**	**t=-2.52, df=46, p<0.05**
Hostility	8 (16.7%))	**52.35 ± 11.20**	**45.81 ± 5.91**	**t=-2.64, df=46, p<0.05**
Phobic Anxiety	6 (12.5%)	51.06 ± 11.65	48.17 ± 6.25	t=-0.94, df=46, p>0.05
Paranoia	7 (14.6%)	51.81 ± 10.03	47.38 ± 9.44	t=-1.49, df=46, p>0.05
Psychoticism	10 (20.8%)	**52.43 ± 10.38**	**45.90 ± 8.15**	**t=-2.23, df=46, p<0.05**
Global Assessment of Functioning Score	6 (12.5%)	**52.26 ± 10.44**	**46.38 ± 8.17**	**t=-2.0, df=46, p<0.05**
SSI	6 (12.5%)	1.74 ± 3.79	1.0 ± 1.83	t=0.13, df=46, p>0.05

Case= any BSI-53 subscale with a T score ≥ 63, SSI total Score ≥ 5

Six patients (12%) were found to be at suicide risk according to SSI; compared with non suicidal patients, they displayed shorter duration of illness (t=2.29, p<0.05), lower levels of ASQ-Confidence (t=2.81, p<0.01), higher levels of Interpersonal Sensitivity (t=-3.03, p<0.01), Depression (t=-3.1, p<0.01), Phobic Anxiety (t=-2.33, p<0.05), Paranoia (t=-1.95, p<0.05), Psychoticism (t=-2.87, p<0.01), GSI (t=-2.61, p<0.01), CTQ-Emotional Neglect (t=-2.04, p<0.05) and LE-Total (t=-2.56, p<0.05)(Table 3).

The duration of the disorder significantly correlated with Obsessivity (r=0.45, p<0.01), Anxiety (r=0.36,p<0.01) and GSI-Total (r=0.29,p<0.05); FNS-Total significantly correlated with Somatization (r=0.37,p<0.01) as well as with FNNS-Total (r=0.53, p<0.01). Regarding illness perception, Somatization was significantly correlated with BIPQ-Cognitive (r=0.34, p<0.05), BIPQ-Emotional (r=0.48, p<0.01) and BIPQ-Total (r=0.49, p<0.01); Obsessivity significantly correlated with BIPQ-Total (r=0.34, p<0.05); Depression correlated with BIPQ-Emotional (r=0.49, p<0.01) and BIPQ-Total (r=0.48, p<0.01); Anxiety correlated with BIPQ-Emotional (r=0.29, p<0.05) and BIPQ-Total (r=0.36, p<0.05); Hostility with BIPQ-Total (r=0.31, p<0.05); Psychoticism with BIPQ-Emotional (r=0.44, p<0.01) and BIPQ-Total (r=0.48, p<0.01). SSI-Total significantly correlated with CTQ-Emotional Abuse (r=0.32, p<0.05), CTQ-Physical Abuse (r=0.29, p<0.05), CTQ-Total (r=0.31, p<0.05), LE-Total (r=0.29, p<0.05), ASQ-Confidence (r=-0.35, p<0.05), ASQ-Preoccupation with Relationship (r=0.37, p<0.01), Obsessivity (r=0.32, p<0.05), Interpersonal Sensitivity (r=0.41, p<0.01), Depression (r=0.56, p<0.01), Phobic Anxiety (r=0.59, p<0.01), Paranoia (r=0.33, p<0.05), Psychoticism (r=0.51, p<0.05) and GSI (r=0.5, p<0.05). TAS-DIF significantly correlated with Obsessivity (r=0.32, p<0.05), Hostility (r=0.28, p<0.05), Psychoticism (r=0.29, p<0.05) and GSI (r=0.30, p<0.05). ASQ-Confidence negatively correlated with Obsessivity (r=-0.42, p<0.01), Interpersonal Sensitivity (r=-0.56, p<0.01), Depression (r=-0.43, p<0.01), Anxiety (r=-0.32, p<0.01), Hostility (r=-0.33, p<0.05), Phobic Anxiety (r=-0.58, p<0.01), Paranoia (r=-0.56, p<0.01), Psychoticism (r=-0.47, p<0.01) and GSI (r=-0.52, p<0.01); ASQ-Disconfort with Closeness, ASQ-Need for Approval and ASQ-Preoccupation with Relationship were positively correlated with all psychopathological dimensions (r ranging from 0.29 to 0.60) (data not shown).

Table 3. Differences in the variables of interest according to suicide risk

	Suicide risk present (n=6)	Suicide risk not present (n=42)	Statistics
Illness Duration (y)	**2.16 ±1.72**	**5.85 ± 9.36**	**t=2.29, df=42.95, p<0.05**
Somatization	54.40 ± 11.87	48.97 ± 9.55	t=-1.25 , df=42 , p>0.05
Obsessivity	53.49 ± 13.65	48.58 ± 8.80	t= -1.17, df=42 , p>0.05
Interpersonal Sensitivity	**58.65 ± 10.04**	**47.67 ± 7.96**	**t=-3.03 , df=42, p<0.01**
Depression	**61.14 ± 13.34**	**47.59 ± 7.71**	**t=-3.59 , df=42, p<0.01**
Anxiety	55.36 ± 11.67	48.67 ± 8.88	t=-1.64 , df=42 , p>0.05
Hostility	53.70 ± 13.23	48.64 ± 9.11	t=-1.18 , df=42 , p>0.05
Phobic Anxiety	**64.70 ± 17.42**	**46.98 ± 5.69**	**t=-2.47 , df=5.17, p<0.05**
Paranoia	**57.46 ± 10.92**	**48.18 ± 8.50**	**t=-2.39 , df=42, p<0.05**
Psychoticism	**60.41 ± 13.25**	**47.61 ± 7.81**	**t=-2.30 , df=5.56, p<0.01**
GSI	**59.61 ± 13.48**	**47.62 ± 7.42**	**t=-3.25 , df=42, p<0.01**
TAS-DIF	20.0 ± 7.34	18.89 ± 6.82	t=-0.36 , df=42 , p>0.05
TAS-DDF	16.67 ± 5.85	13.39 ± 5.91	t=-1.26 , df=42 , p>0.05
TAS-EOT	17.84 ± 4.44	17.84 ± 4.91	t=-0.46 , df=42 , p>0.05
ASQ-C	**28.33 ± 9.04**	**38.13 ± 5.78**	**t=3.56 , df=42 , p<0.01**
ASQ-DC	41.16 ± 7.57	36.68 ± 7.53	t=-1.35 , df=42 , p>0.05
ASQ-RS	17.00 ± 6.95	18.44 ± 5.33	t=0.59 , df= 42 , p>0.05
ASQ-NA	24.16 ± 7.83	21.73 ± 6.54	t=-0.82 , df=42 , p>0.05
ASQ-PR	27.83 ± 11.47	22.60 ± 6.29	t=-1.67 , df=42 , p>0.05
CTQ-Emotional Abuse	14.16 ± 8.23	7.54 ± 3.80	t=-1.93 , df=5.35, p>0.05
CTQ-Physical Abuse	11.50 ± 8.24	6.16 ± 2.24	t=-1.57 , df=5.12, p>0.05
CTQ-Sexual Abuse	8.0 ± 4.64	6.54 ± 2.94	t=-0.74 , df=5.67, p>0.05
CTQ-Emotional Neglect	**13.83 ± 6.21**	**9.37 ± 4.48**	**t=-2.14 , df=41, p<0.05**
CTQ-Physical Neglect	9.16 ± 5.23	6.56 ± 2.19	t=-1.20 , df=5.28, p>0.05
LE-Total	**5.33 ± 2.65**	**2.63 ± 2.49**	**t=-2.44 , df=42 , p<0.05**
BIPQ-Cognitive	28.5 ± 9.48	27.84 ± 7.99	t=-0.18 , df=42 , p>0.05
BIPQ-Emotional	15.0 ± 5.51	12.76 ± 5.18	t=-0.97 , df=42 , p>0.05
BIPQ-Total	54.16 ± 12.49	45.55 ± 10.58	t=-1.81 , df=42 , p>0.05
PCS-12	38.70 ± 10.37	40.432 ± 11.30	t=0.35 , df=42 , p>0.05
MCS-12	33.15 ± 17.34	39.38 ± 10.05	t=1.26 , df=42 , p>0.05
FSS-Total	34.5 ± 13.56	29.11 ± 12.48	t=-0.97 , df=42 , p>0.05
FNS-Total	2.16 ± 1.16	2.68 ± 1.72	t=0.70 , df=42 , p>0.05
FNSS-Total	1.83 ± 1.6	1.65 ± 1.56	t=-0.25 , df=42 , p>0.05
CCI	1.0 ± 1.26	2.18 ± 1.98	t=1.40 , df=42 , p>0.05

TAS-DIF=TAS Difficulty Identifying Feelings subscale; TAS-DDF= TAS Difficulty Describing Feelings subscale; TAS-EOT= TAS Externally Oriented Thinking subscale; ASQ-C= ASQ Confidence subscale; ASQ-DC= ASQ Discomfort with Closeness subscale; ASQ-RS= ASQ Relationships as Secondary subscale; ASQ-NA= ASQ Need for Approval subscale; ASQ-PR= ASQ Preoccupied with Relationship subscale; LE-Total= life events total score; FSS= Fatigue Severity Score; FNS-Total= total number of functional neurological symptoms; FNNS-Total= Total number of non neurological functional symptoms; CCI= Charlson Comorbidity Index

3.3 Childhood Trauma and Life Events

Median LE-Total was 2.5 (IQR=1-4.75). According to CTQ, twenty patients (42.6%) had experienced at least one form of severe abuse during childhood: of them 11 (23.4%) experienced severe sexual abuse, 8 (17.0%) severe emotional neglect, 6 (12.8%) severe emotional abuse, 5 (10.6%) severe physical neglect and 4 (8.5%) severe physical abuse. Compared with non-traumatized patients, they displayed higher levels of Interpersonal Sensitivity (t=-2.08, p<0.05), Paranoia (t=-3.09,

p<0.01) , TAS-DDF (t=-3.02, p<0.01) and Global Assessment of Functioning Score (t=-2.12, p<0.05) and lower scores of ASQ-Confidence (t=2.6, p<0.01) and BIPQ-Cognitive (t=2.02, p<0.05) (**Table 4**). CTQ-Emotional Abuse significantly correlated with Phobic Anxiety (r=0.38, p<0.01) and Paranoia (r=0.29, p<0.05); CTQ-Physical Abuse with Phobic Anxiety (r=0.30, p<0.05) and TAS-DIF (r=-0.32, p>0.05); CTQ-Emotional Neglect with Obsessivity (r=0.33, p<0.05), Interpersonal Sensitivity (r=0.29, p<0.05), Phobic Anxiety (r=0.44, p<0.01), Paranoia (r=0.34, p<0.05), GSI (r=0.33, p<0.05), ASQ-Confidence (r=-0.47, p<0.05), ASQ-Preoccupation with Relationship (r=0.29, p<0.05); CTQ-Physical Neglect with Phobic Anxiety (r=0.37, p<0.01) (data not shown).

Table 4. Differences in the variables of interest according to childhood abuse

	Positive history of Childhood Abuse (n=20)	**Negative history of Childhood Abuse (n=27)**	**Statistics**
Identity	1.55 ± 1.21	1.04 ± 0.98	t=-1.37, df=33, p>0.05
Self-Direction	1.11 ± 1.04	0.83 ±1.05	t=-0.80, df=33, p>0.05
Empathy	1.14 ± 1.08	0.62 ± 0.85	t=-1.55, df=33, p>0.05
Intimacy	1.39 ± 1.31	0.69 ± 0.77	t=-1.88, df= 25.69, p>0.05
Global Assessment of Functioning Score	**1.46 ± 1.04**	**0.80 ± 0.79**	**t=-2.12, df=33, p<0.05**
Somatization	49.12 ± 9.79	50.06 ± 10.39	t=0.29, df=41, p>0.05
Obsessivity	51.91 ± 12.42	47.66 ± 6.59	t=-1.32, df=23.90, p>0.05
Interpersonal Sensitivity	**52.70 ± 10.42**	**46.76 ± 7.21**	**t=-2.08, df= 28.35, p<0.05**
Depression	49.91 ± 12.37	49.34 ± 7.64	t=-0.17, df=26.23, p>0.05
Anxiety	50.50 ± 9.89	49.19 ± 9.36	t=-0.44, df=41, p>0.05
Hostility	52.12 ± 11.84	47.58 ± 7.72	t=-1.42, df=27.19, p>0.05
Phobic Anxiety	52.64 ± 13.29	47.23 ± 6.50	t=-1.59, df=22.88, p>0.05
Paranoia	**54.78 ± 11.41**	**45.95 ± 5.03**	**t=-3.09, df= 21.79, p<0.01**
Psychoticism	51.22 ± 11.38	48.14 ± 8.35	t=-1.02, df=41, p>0.05
GSI	51.98 ± 11.80	47.54 ± 6.70	t=-1.44, df=24.87, p>0.05
TAS-DIF	18.55 ± 6.81	19.28 ± 7.06	t=0.33, df=41, p>0.05
TAS-DDF	**16.72 ± 5.36**	**12.0 ± 5.63**	**t=-3.02, p<0.01**
TAS-EOT	16.44 ± 4.43	19.08 ± 4.95	t=0.33, df=41, p>0.05
ASQ-C	**33.72 ± 7.25**	**39.16 ± 6.20**	**t=2.6, df=41, p<0.01**
ASQ-DC	39.50 ± 7.59	35.76 ± 7.53	t=-1.6, df=41, p>0.05
ASQ-RS	18.05 ± 5.54	18.28 ± 5.68	t=0.12, df=41, p>0.05
ASQ-NA	22.22 ± 7.05	22.16 ± 6.61	t=-0.30, df=41, p>0.05
ASQ-PR	25.22 ± 8.36	22.08 ± 6.33	t=-1.40, df=41, p>0.05
BIPQ-Cognitive	**25.66 ± 6.96**	**29.44 ± 8.74**	**t=2.02, df=41, p<0.05**
BIPQ-Emotional	11.83 ± 4.69	13.84 ± 5.58	t=1.51, df=41, p>0.05
BIPQ-Total	44.83 ± 8.32	48 ± 12.94	t=0.91, df=41, p>0.05
PCS-12	40.88 ± 11.15	40.24 ± 11.12	t=-0.18, df=41, p>0.05
MCS-12	38.34 ± 11.51	38.64 ± 11.52	t=0.08, df=41, p>0.05
FSS-Total	29.56 ± 12.61	29.60 ± 12.92	t=0.01, df=41, p>0.05
FNS-Total	2.38 ± 1.28	2.68 ± 1.86	t=0.57, df=41, p>0.05
FNSS-Total	1.77 ± 1.47	1.56 ± 1.63	t=-0.44, df=41, p>0.05
CCI	1.94 ± 1.98	2.08 ± 1.97	t=0.22, df=41, p>0.05

TAS-DIF=TAS Difficulty Identifying Feelings subscale; TAS-DDF= TAS Difficulty Describing Feelings subscale; TAS-EOT= TAS Externally Oriented Thinking subscale; ASQ-C= ASQ Confidence subscale; ASQ-DC= ASQ Discomfort with Closeness subscale; ASQ-RS= ASQ Relationships as Secondary subscale; ASQ-NA= ASQ Need for Approval subscale; ASQ-PR= ASQ Preoccupied with Relationship subscale; FSS= Fatigue Severity Score; FNS-Total= total number of functional neurological symptoms; FNNS-Total= Total number of non neurological functional symptoms; CCI= Charlson Comorbidity Index

3.4 Attachment, Alexithymia and Personality Functioning

According to TAS, 8 patients (16.7%) and 9 (18.8%) were classified as definite and possibly alexithymic respectively. Patients presented on average mild impairments in personality functioning domains, namely Identity (M=1.28 ± 1.11), Self Direction (M=0.96 ± 1.04), Empathy (0.87 ± 0.99), Intimacy (M=1.03 ± 1.11), as well as in Global Assessment of Functioning Score (M=1.12 ± 0.97). Alexithymic patients showed worse personality functioning in all domains, as well as higher scores in insecure attachment scales ASQ-RS and ASQ-NA (**Table 5**). Identity subscale significantly correlated with FNS-Total (r=0.34, p<0.05) and FNNS-Total (r=0.53, p<0.01) (data not shown).

Table 5. Differences in the variables of interest according to the presence of alexithymia

	A. Definite Alexithymic (n=8)	**B. Possible Alexithymic (n=9)**	**C. Not Alexithymic (n=31)**	**Statistics**
Identity	**2.12 ± 1.29**	**1.61 ± 0.92**	**0.88 ± 0.90**	**A>C, F=4.84, p<0.05**
Self-Direction	**1.87 ± 1.38**	**1.10 ± 0.96**	**0.58 ± 0.68**	**A>C, F=5.71, p<0.01**
Empathy	**1.74 ± 1.26**	**1.44 ± 0.90**	**0.38 ± 0.50**	**A>C, B>C, F=10.18, p<0.01**
Intimacy	**1.83 ± 1.64**	**1.38 ± 1.04**	**0.63 ± 0.65**	**A>C, F=4.61, p<0.05**
Global Assessment of Functioning Score	**1.89 ± 1.30**	**1.38 ± 0.79**	**0.75 ± 0.68**	**A>C, F=5.19, p<0.05**
Somatization	55.99 ±13.55	48.70 ± 9.00	48.92 ± 9.15	F=1.70, p>0.05
Obsessivity	**54.92 ± 10.21**	**56.07 ± 9.34**	**47.19 ± 9.21**	**B>C, F=4.34, p<0.05**
Interpersonal Sensitivity	54.07 ± 14.40	49.10 ± 9.29	49.42 ± 9.05	F=0.73, p>0.05
Depression	54.82 ± 10.32	52.03 ± 11.59	48.46 ± 9.29	F=1.50, p>0.05
Anxiety	54.19 ± 15.78	50.98 ± 9.77	49.03 ±8.07	F=0.88, p>0.05
Hostility	57.15 ± 11.81	50.97 ± 12.36	47.93 ± 8.25	F=2.91, p>0.05
Phobic Anxiety	53.22 ± 15.34	50.79 ± 7.49	48.99 ± 9.27	F=0.57, p>0.05
Paranoia	55.83 ± 15.06	51.85 ± 11.55	48.33 ± 7.34	F=2.03, p>0.05
Psychoticism	55.82 ± 11.04	49.57 ± 11.95	48.80 ± 9.03	F=1.59, p>0.05
GSI	55.50 ± 13.52	51.60 ± 9.52	48.14 ± 8.65	F=2.46, p>0.05
ASQ-C	33.50 ± 13.23	33.33 ± 5.63	37.38 ± 5.99	F=1.52, p>0.05
ASQ-DC	42.75 ± 10.19	38.77 ± 7.64	35.93 ± 6.61	F=2.78, p>0.05
ASQ-RS	**23.12 ± 3.87**	**18.88 ± 4.25**	**16.54 ± 5.35**	**A>C, F=5.71, p<0.01**
ASQ-NA	**27.0 ± 5.63**	**24.11 ± 8.10**	**20.58 ± 5.93**	**A>C, F=3.71, p<0.05**
ASQ-PR	26.75 ± 6.25	26.22 ± 11.16	22.77 ± 6.76	F=1.28, p>0.05
CTQ-Emotional Abuse	8.5 ± 4.07	8.11 ± 4.10	8.56 ± 5.44	F=0.02, p>0.05
CTQ-Physical Abuse	6.0 ± 1.60	5.77 ± 1.56	7.33 ± 4.60	F=0.77, p>0.05
CTQ-Sexual Abuse	7.75 ± 4.52	6.11 ± 2.97	6.76 ± 2.94	F=0.54, p>0.05
CTQ-Emotional Neglect	10.0 ± 5.92	11.33 ± 5.54	9.93 ± 4.37	F=0.29, p>0.05
CTQ-Physical Neglect	6.62 ± 2.13	7.66 ± 3.39	6.66 ± 2.75	F=0.47, p>0.05
BIPQ-Cognitive	30.37 ± 6.30	31.88 ± 5.37	26.09 ± 8.79	F=2.32, p>0.05
BIPQ-Emotional	15.75 ± 2.81	15.0 ± 5.61	12.0 ± 5.65	F=2.23, p>0.05
BIPQ-Total	50.0 ± 8.92	54.55 ± 10.12	44.58 ± 13.47	F=2.51, p>0.05
PCS-12	34.61 ± 14.72	38.07 ± 6.72	41.63 ± 10.86	F=1.44, p>0.05
MCS-12	32.77 ± 9.40	36.15 ± 13.56	40.31 ± 11.16	F=1.58, p>0.05
FSS-Total	32.88 ± 14.99	27.11 ± 14.02	30.29 ± 11.86	F=0.43, p>0.05
FNS-Total	2.37 ± 1.06	3.11 ± 1.61	2.58 ± 1.72	F=0.50, p>0.05
FNSS-Total	1.62 ± 1.76	1.88 ± 1.26	1.70 ± 1.55	F=0.06, p>0.05
CCI	3.25 ± 2.81	1.77 ± 1.30	1.77 ± 1.72	F=2.05, p>0.05

ASQ-C= ASQ Confidence subscale; ASQ-DC= ASQ Discomfort with Closeness subscale; ASQ-RS= ASQ Relationships as Secondary subscale; ASQ-NA= ASQ Need for Approval subscale; ASQ-PR= ASQ Preoccupied with Relationship subscale; FSS= Fatigue Severity Score; FNS-Total= total number of functional neurological symptoms; FNNS-Total= Total number of non neurological functional symptoms; CCI= Charlson Comorbidity Index

3.5 Fatigue and Quality of Life

Nineteen patients (39.6%) resulted fatigued according to FFS. Compared with non fatigued patients, they showed higher FNNS ($t=-3.24$, $p<0.01$) and resulted more insecure in ASQ-PR ($t=-1.98$, $p<0.05$) and ASQ-C ($t=2.02$, $p<0.05$) attachment measures; they also showed higher levels of Interpersonal Sensitivity ($t=-2.0$, $p<0.05$), Depression ($t=-2.17$, $p<0.05$) and personality functioning impairments in Identity (-3.12, $p<0.01$) and Self-Direction ($t=-2.14$, $p<0.05$) (**Table 6**). PCS significantly correlated with Identity ($r=-0.53$, $p<0.01$), Self-Direction ($r=-0.43$, $p<0.01$), Global Assessment of Functioning Score ($r=-0.4$, $p<0.05$), Somatization ($r=-0.53$, $p<0.01$), TAS-DIF ($r=-0.31$, $p<0.05$), BIPQ-Cognitive ($r=-0.39$, $p<0.01$), BIPQ-Emotional ($r=-0.48$, $p<0.01$) and BIPQ-Total ($r=-0.47$, $p<0.01$) while MCS with FNNS ($r=-0.35$, $p<0.05$), TAS-DIF ($r=-0.37$, $p<0.01$), ASQ-DC ($r=-0.38$, $p<0.01$), ASQ-RS ($r=-0.33$, $p<0.05$), ASQ-NA ($r=-0.58$, $p<0.01$), ASQ-PR ($r=-0.48$, $p<0.01$), BIPQ-Emotional ($r=-0.34$, $p<0.05$), BIPQ-Total ($r=-0.39$, $p<0.01$), SSI ($r=-0.3$, $p<0.05$) and all psychopathological BSI-53 subscales (r ranging from -0.32 to -0.58) (data not shown).

Table 6. Differences in the variables of interest according to the presence of fatigue

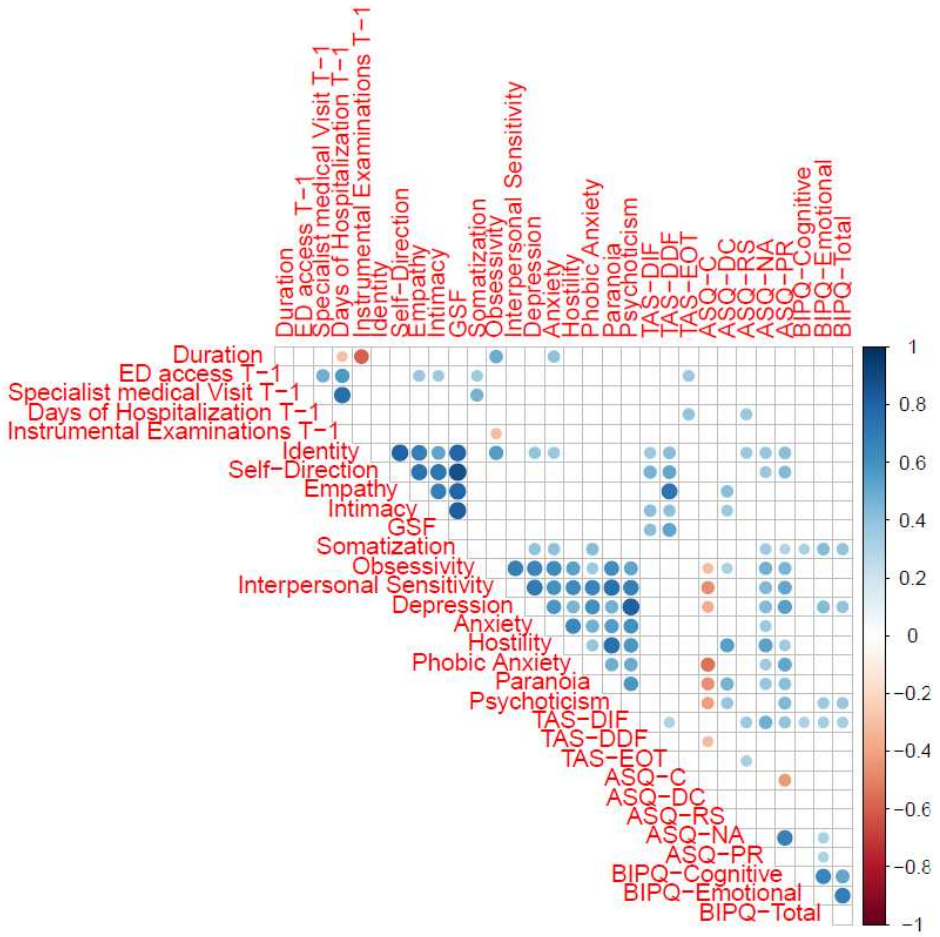
	Fatigued (n=19)	Not Fatigued (n=29)	Statistics
Identity	**1.93 ± 1.24**	**0.80 ± 0.70**	**t=-3.12, df=20.70, p<0.01**
Self-Direction	**1.39 ± 1.12**	**0.64 ± 0.87**	**t=-2.14, df=25.74, p<0.05**
Empathy	1.08 ± 0.97	0.72 ± 1.00	t=-1.08, df=33, p>0.05
Intimacy	1.26 ± 1.30	0.86 ± 0.94	t=-1.05, df=33, p>0.05
Global Assessment of Functioning Score	1.41 ± 1.04	0.90 ± 0.87	t=-1.56, df=33, p>0.05
Somatization	53.12 ± 11.01	48.05 ± 9.08	t=-1.73, df=46, p>0.05
Obsessivity	53.40 ± 12.26	48.02 ± 7.80	t=-1.69, df=27.56, p>0.05
Interpersonal Sensitivity	**53.98 ± 12.47**	**47.62 ± 7.28**	**t=-2.00, df=26.10, p<0.05**
Depression	**54.25 ± 11.92**	**47.54 ± 7.63**	**t=-2.17, df=27.68, p<0.05**
Anxiety	51.29 ± 11.46	49.58 ± 8.95	t=-0.58, df=46 , p>0.05
Hostility	50.00 ± 10.19	50.06 ± 10.22	t=0.19, df=46, p>0.05
Phobic Anxiety	53.23 ± 13.67	47.82 ± 6.17	t=-1.67, df=22.86, p>0.05
Paranoia	51.50 ± 12.49	49.41 ± 8.02	t=-0.64, df=27.73, p>0.05
Psychoticism	51.74 ± 11.16	49.05 ± 9.33	t=-0.90, df=46, p>0.05
GSI	53.30 ± 12.94	48.14 ± 7.06	t=-1.58, df=25.09, p>0.05
TAS-DIF	21.42 ± 5.56	18.03 ± 7.82	t=-1.63, df=46, p>0.05
TAS-DDF	14.21 ± 6.10	13.66 ± 5.91	t=-0.31, df=46, p>0.05
TAS-EOT	17.42 ± 4.45	18.10 ± 5.27	t=0.46, df=46, p>0.05
ASQ-C	**33.31 ± 9.32**	**37.72 ± 5.81**	**t=2.02, df=46, p<0.05**
ASQ-DC	37.84 ± 8.75	37.44 ± 7.15	t=-0.17, df=46, p>0.05
ASQ-RS	19.42 ± 5.05	17.20 ± 5.59	t=-1.39, df=46, p>0.05
ASQ-NA	24.42 ± 6.50	20.93 ± 6.54	t=-1.81, df=46, p>0.05
ASQ-PR	**26.73 ± 6.32**	**22.34 ± 8.13**	**t=-1.98, df=46, p<0.05**
CTQ-Emotional Abuse	8.88 ± 5.05	8.20 ± 4.90	t=-0.45, df=45 , p>0.05
CTQ-Physical Abuse	6.88 ± 4.37	6.75 ± 3.53	t=-0.11, df=45, p>0.05
CTQ-Sexual Abuse	7.27 ± 3.52	6.51 ± 3.04	t=-0.78, df=45, p>0.05
CTQ-Emotional Neglect	11.22 ± 5.49	9.58 ± 4.29	t=-1.14, df=45, p>0.05
CTQ-Physical Neglect	7.44 ± 3.20	6.48 ± 2.44	t=-1.16, df=45, p>0.05
LE-Total	3.15 ± 2.94	2.79 ± 2.36	t=-0.47, df=46, p>0.05
BIPQ-Cognitive	29.57 ± 5.01	26.79 ± 9.60	t=-1.31, df=32.65, p>0.05
BIPQ-Emotional	14.15 ± 4.25	12.55 ± 6.08	t=-1.07, df=45.74, p>0.05
BIPQ-Total	49.57 ± 11.68	45.89 ± 13.32	t=-0.98, df=46, p>0.05
PCS-12	32.62 ± 10.49	44.49 ± 8.79	t=4.23, df=46, p>0.05
MCS-12	35.67 ± 12.48	39.98 ± 10.72	t=1.27, df=46, p>0.05
FNS-Total	3.15 ± 1.38	2.31 ± 1.67	t=-1.83, df=46, p>0.05
FNSS-Total	**2.52 ± 1.50**	**1.20 ± 1.29**	**t=-3.24, df=46, p<0.01**
CCI	2.94 ± 2.01	1.41 ± 1.61	t=-2.91, df=46, p>0.05

TAS-DIF=TAS Difficulty Identifying Feelings subscale; TAS-DDF= TAS Difficulty Describing Feelings subscale; TAS-EOT= TAS Externally Oriented Thinking subscale; ASQ-C= ASQ Confidence subscale; ASQ-DC= ASQ Discomfort with Closeness subscale; ASQ-RS= ASQ Relationships as Secondary subscale; ASQ-NA= ASQ Need for Approval subscale; ASQ-PR= ASQ Preoccupied with Relationship subscale; FNS-Total= total number of functional neurological symptoms; FNNS-Total= Total number of non neurological functional symptoms; CCI= Charlson Comorbidity Index

3.6 Patterns of healtchcare utilization and patients satisfaction

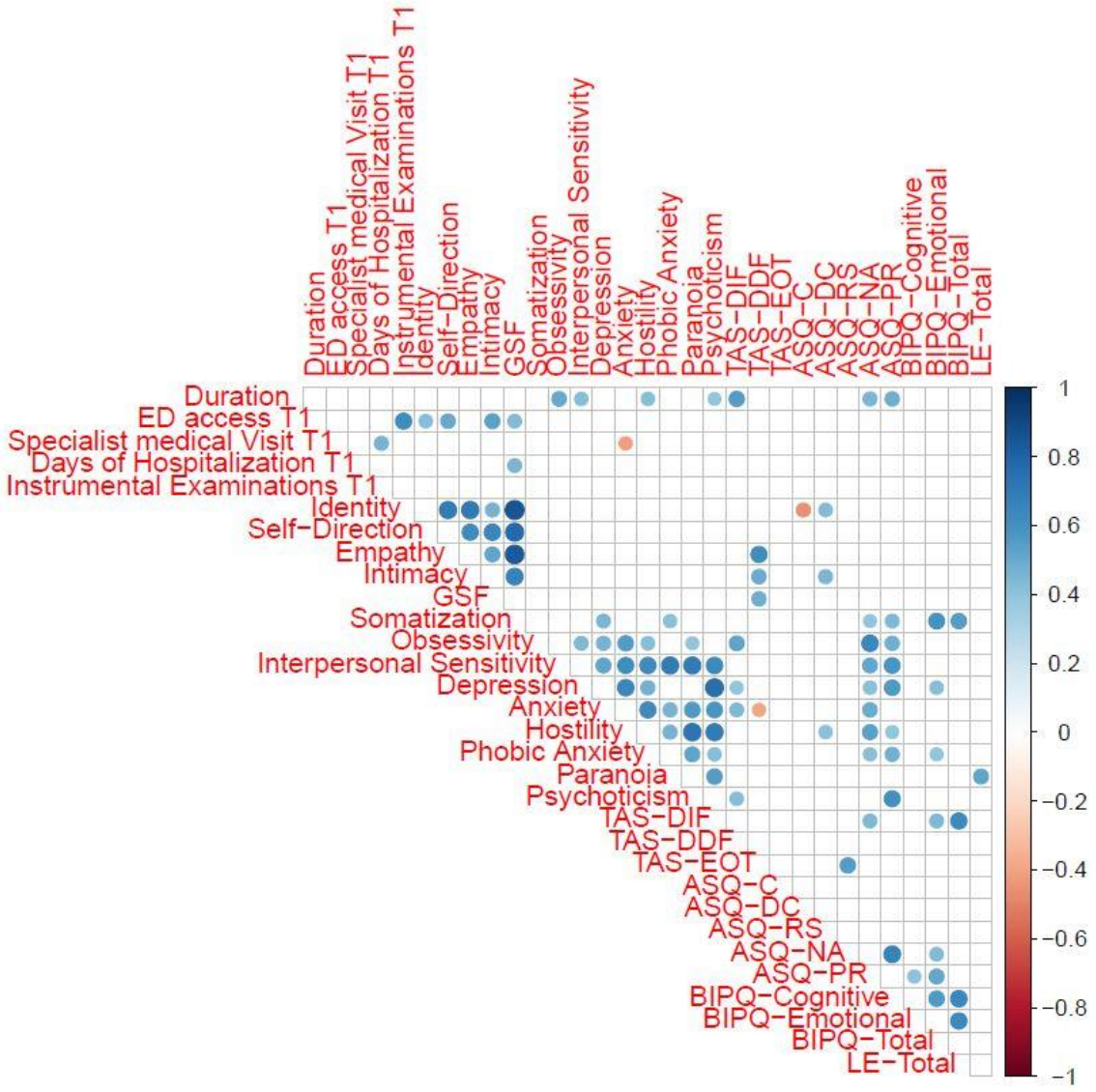
Patients' patterns of healthcare utilization for T-1 were available for 44 patients; of them 26, completed the follow up at 1 year (T1). At T-1, the total number of ED visits significantly correlated with Empathy (r=0.38, p<0.05), Intimacy (r=0.36, p<0.05), Somatization (r=0.35, p<0.05) and TAS-EOT (r=0.37, p<0.05); the total number of specialist visits correlated with Somatization (r=0.46,p<0.01); the total number of days of hospitalization correlated with duration of illness (r=-0.30, p<0.05), TAS-EOT (r=0.39, 0.01) and ASQ-RS (r=0.37, p<0.05); the total number of instrumental examinations (i.e. CT scans, MRI, EMG, EEG, SPET, ECG, evoked potentials, ultrasonography) significantly correlated with Identity (r=0.35, p<0.05), Self-Direction (r=0.43, p<0.05), Empathy (r=0.39, p<0.05), Intimacy (r=0.47, p<0.01), Global Assessment of Functioning Score (r=0.40, p<0.05), Somatization (r=0.33, p<0.05), TAS-EOT (r=0.31, p<0.05), ASQ-RS (r=0.30, p<0.05) and BIPQ-Emotional (r=0.30, p<0.05) (**Figure 1**). At T-1, 18 patients (40.9%) resulted to be frequent ED users (i.e. had ≥3 ED visits during the year preceding the evaluation): when compared with non-frequent ED users, they showed higher impairments in Empathy (t=-2.16, p<0.05) and were less convinced to currently (T0) suffer from a pathology pertaining to another system (t=2.05, p<0.05); no other differences were found in the variables of interest (data not shown).

Figure 1. Correlations between the variables of interest (T0) and healthcare utilization measures (T-1)



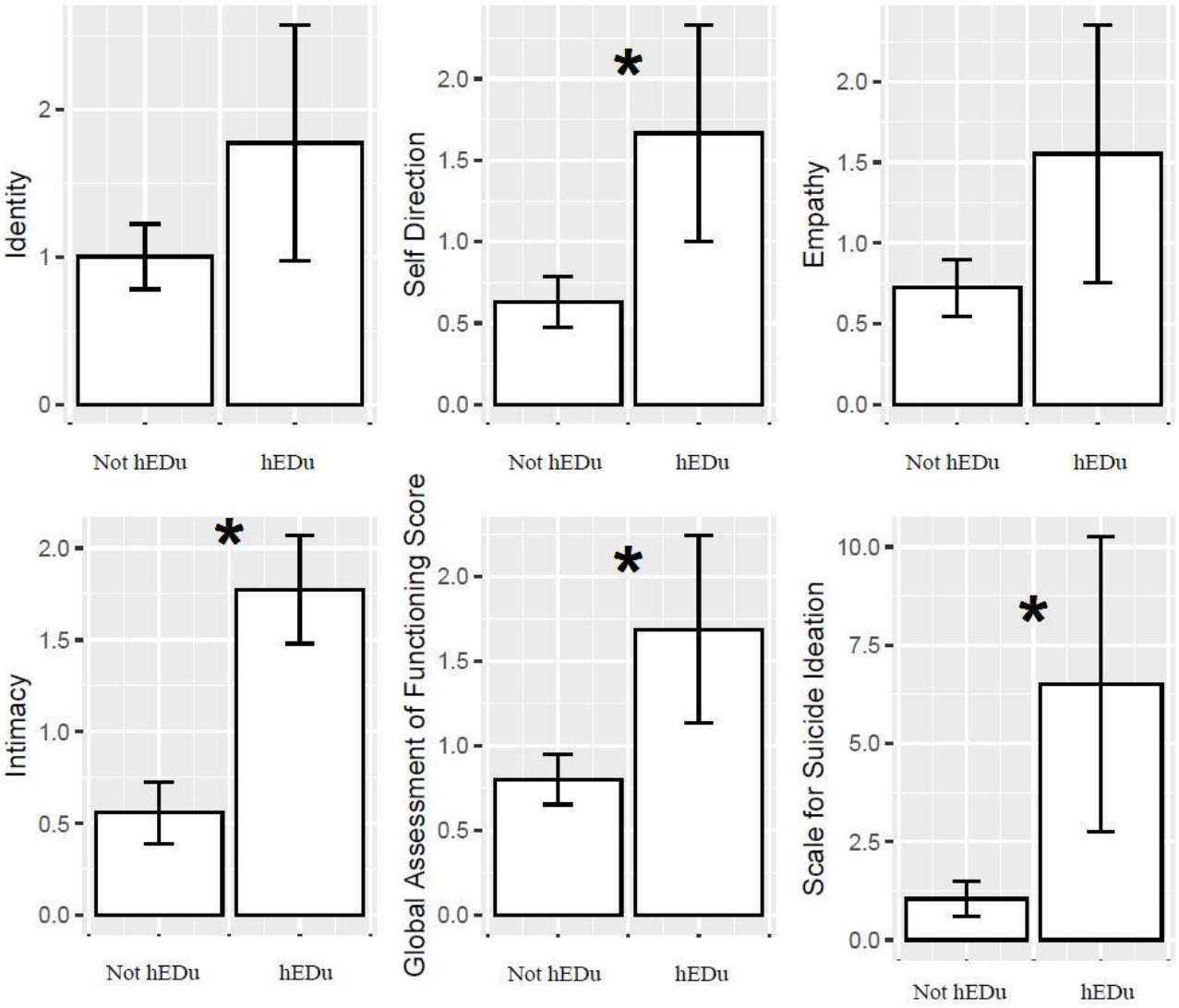
At T1, the total number ED visits correlated with, Depression (r=0.41, p<0.05), Psychoticism (r=0.45, p<0.05) and all the dimensions of personality functioning impairments (r ranging from 0.43 to 0.63); the total number of specialist visits correlated with Anxiety (r=-0.42, p<0.05), the belief of suffering from a mysterious or a very rare disease (r=0.48, p<0.05) and that the symptoms are caused by stress or preoccupations (r=-0.40, p<0.05); the total number of days of hospitalization correlated with Global Assessment of Functioning Score (r=0.55, p<0.01), ASQ-RS (r=-0.39, p<0.05) and CTQ-Physical Abuse (r=0.45, p<0.05) (**Figure 2**).

Figure 2. Correlations between the variables of interest (T0) and healthcare utilization measures (T1)



At T1, 4 patients (15.4%) resulted to be frequent ED users (i.e. had ≥3 ED visits during the year preceding the evaluation): compared with non-frequent ED users, they showed higher impairments in Self-Direction (t=-2.24, p<0.05), Intimacy (t=-2.72, p<0.05), Global Assessment of Functioning Score (t=-2.07, p<0.05) and showed higher levels of suicidality (t=-3.04, p<0.01) (**Figure 3**); no other differences were found in the variables of interest.

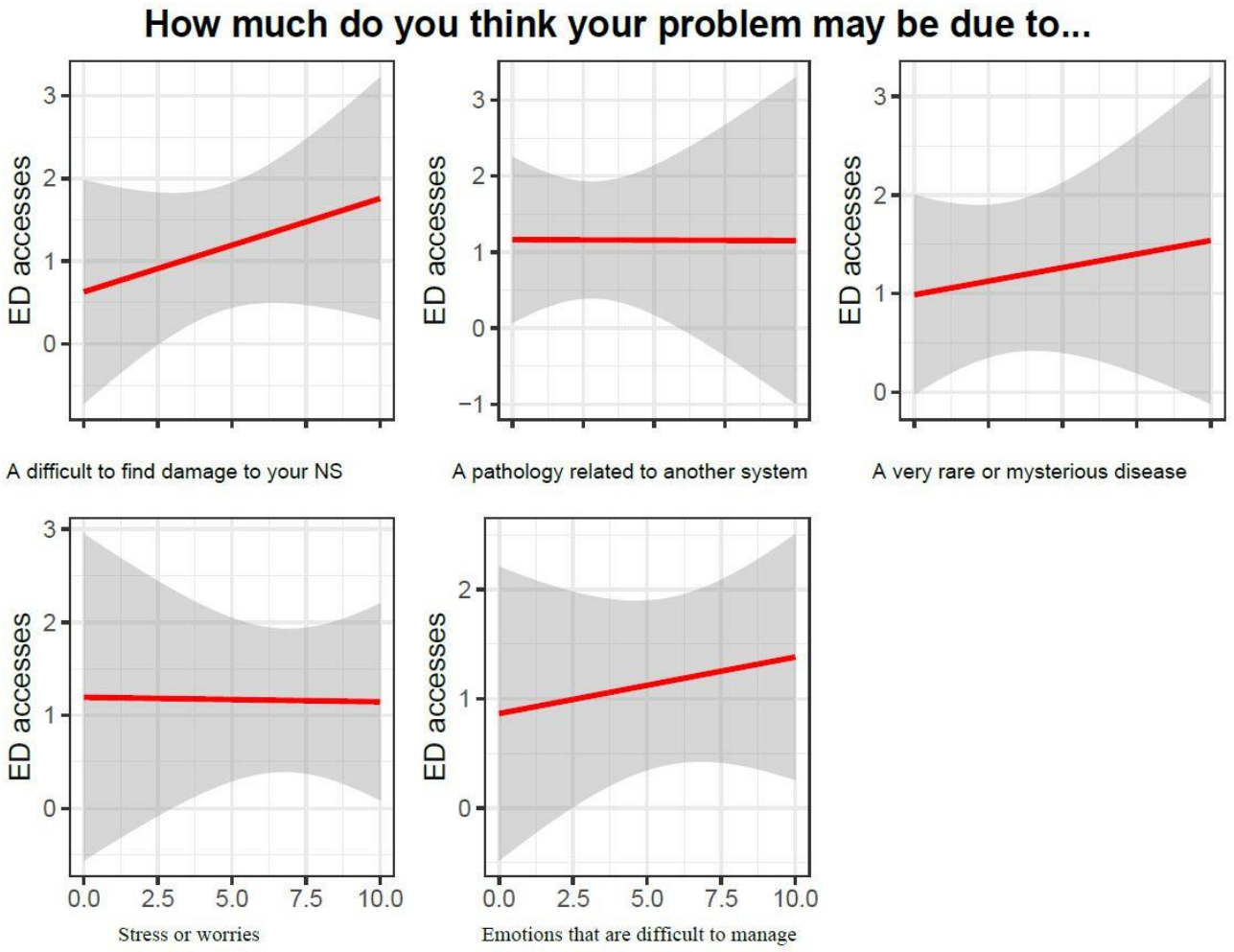
Figure 3. Significant differences in the variables of interest among high ED users (hEDu) and not high ED users (not hEDu) at T1



At T1, six patients (23.1%) had attended to the ED because of the same FND; these patients did not differ from the rest of the population in any of the variables of interest (all p>0.05). Regarding patients' satisfaction, participants on average reported being sufficiently understood by physicians and healthcare professionals (6.31 ± 3.24) and sufficiently satisfied by the treatments received (6.44 ± 3.39) even though they were less convinced of having received a correct diagnosis (5.77 ± 3.42). For one patient, the conversion episode, once resolved, was followed by two consecutive hospitalizations in the psychiatric ward (25 days in total) for suicidal ideation and an unsuccessful suicide attempt.

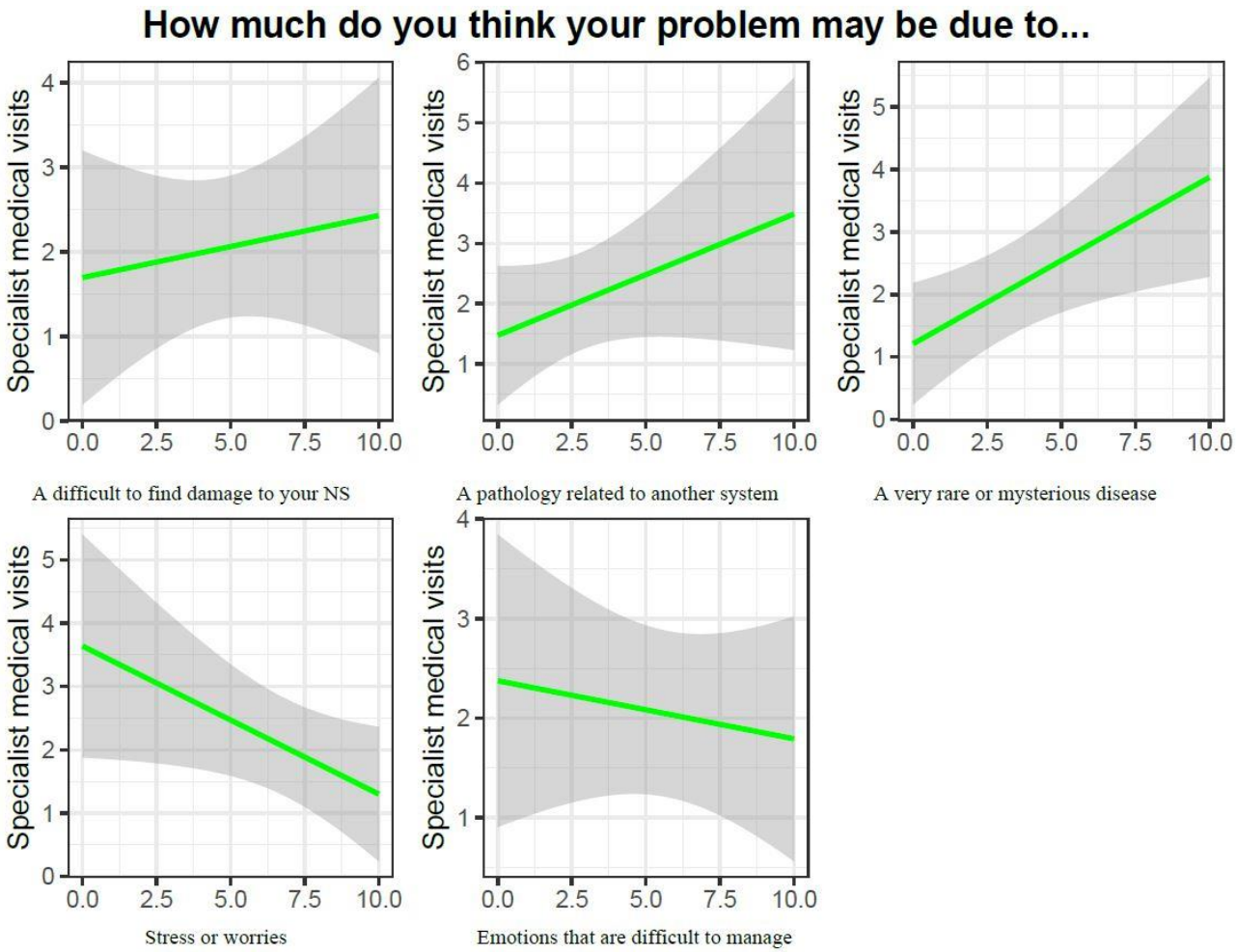
Specific trends in ED accesses, specialist medical visits and total number of instrumental examinations at T1 according to specific beliefs measured at T0, are visually depicted in **Figures 4-6** as a result of simple linear models.

Figure 4. ED accesses at T1 according to specific beliefs measured at T0



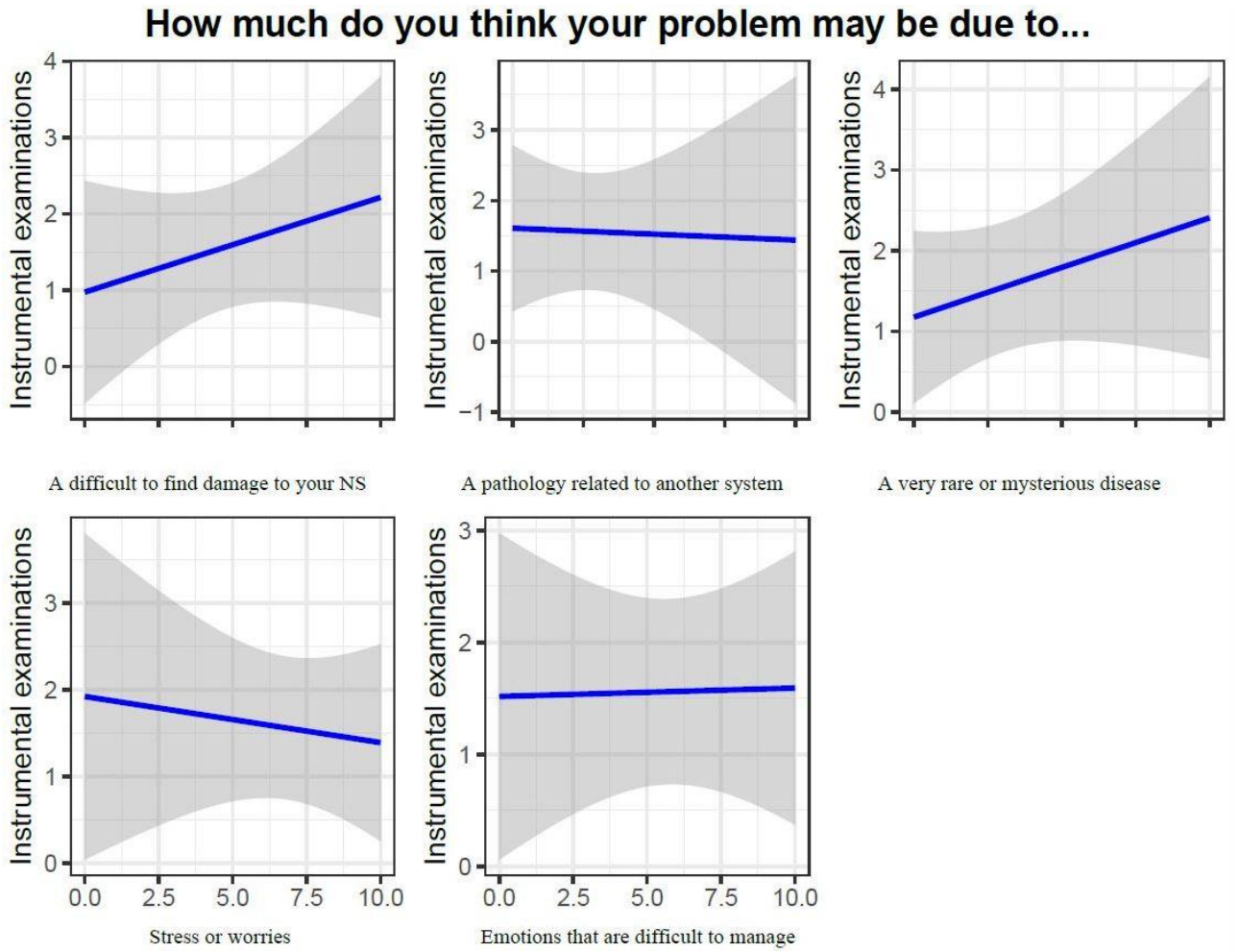
ED= Emergency Department; NS= nervous system

Figure 5. Total specialist medical visits at T1 according to specific beliefs measured at T0



NS= nervous system

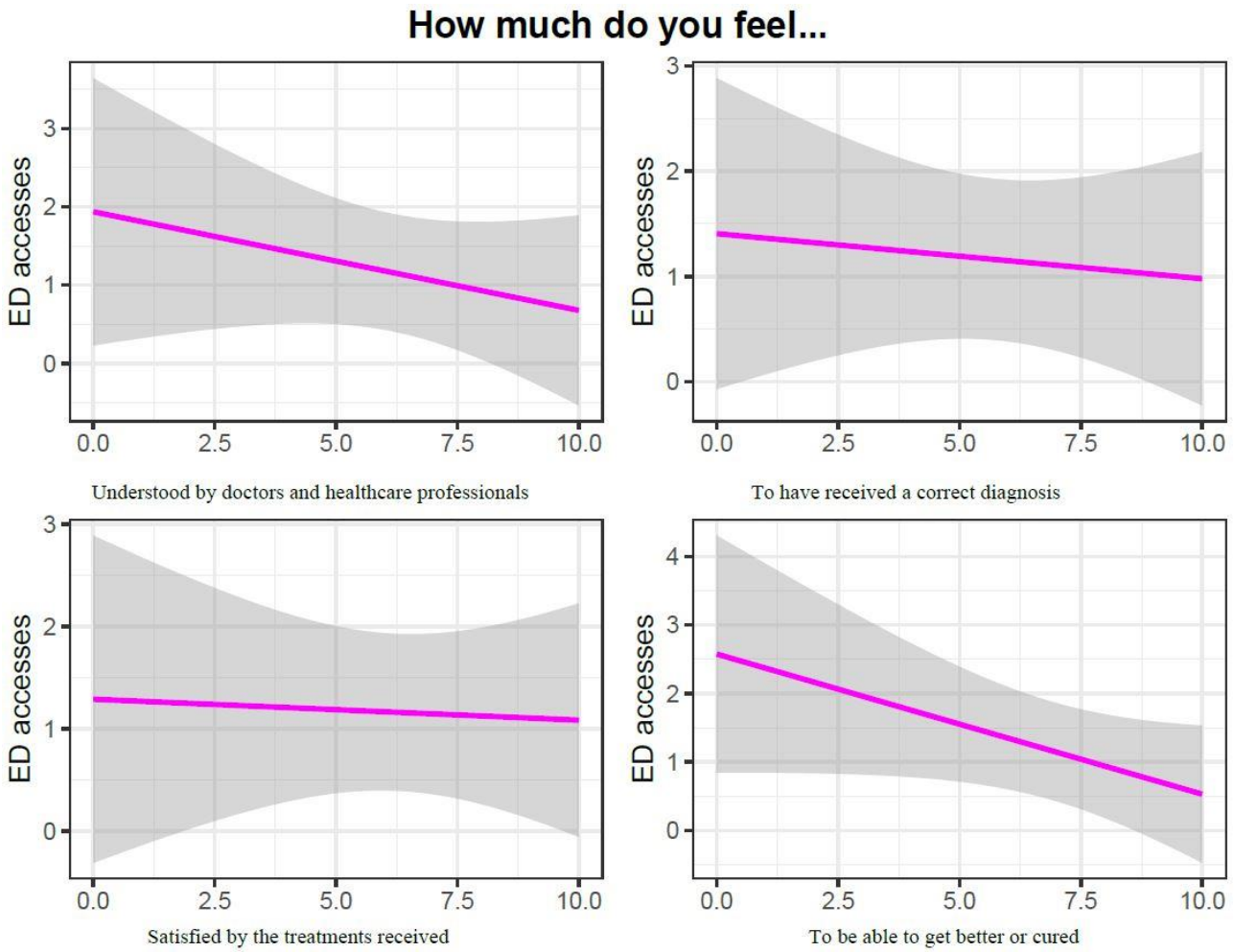
Figure 6. Total number of instrumental examinations at T1 according to specific beliefs measured at T0



NS= nervous system

The belief at T0 to suffer from a difficult to find damage to the nervous system or from a very rare or mysterious disease is related to a trend at T1 towards more ED accesses, specialist medical visits and instrumental examinations; the belief of suffering from a pathology related to another system towards an increase in specialist medical visits; the belief that the cause of the symptoms is due to stress or worries, towards a decrease in specialist medical visits and instrumental examinations; finally, the belief that the symptoms are caused by emotions that are difficult to manage is related to a trend towards more ED accesses and less specialist medical visits. Similarly, Figure7 show the trends in ED accesses at T1 according to patients' satisfaction as measured at T0: feeling understood by doctors and healthcare professionals, the belief of having received a correct diagnosis, feeling satisfied by the treatments received and the belief of being able to get better are related to a trend towards less ED accesses.

Figure 7. ED accesses at T1 according to patients satisfaction and perceived curability



4.0 Discussion

The present study aimed to explore psychosocial distress and to identify specific psychopathologic features related to healthcare utilization in a sample of patients affected by FND. Our study indicates that patterns of healthcare utilization, namely the number of ED accesses, specialist medical visits and total number of instrumental examinations, are related to personality functioning and specific illness beliefs, confirming the importance of addressing both these area when encountering patients with medical comorbidities and complex symptoms (A Carson, Hallett, & Stone, 2016; Cosci, 2012; Wise, Dellemonache, & Bachawati, 2012).

With respect to ED, we found that the number of accesses during the previous year correlated with Somatization and impairments in interpersonal dimensions (Intimacy and Empathy) of the AMPD DSM-5 model, whilst the number of accesses during the following year correlated with all the dimensions but Empathy. Moreover, we found that a particular subgroup of patients, defined as high ED users displayed worse functioning in all personality domains, even though these differences were found significant only for Self-Direction, Intimacy and Global Assessment of Functioning Score. While these differences are probably attributable to the small sample size, they confirm the association between personality pathology and increased healthcare use (Frankenburg & Zanarini, 2004; McCormick et al., 2007; Powers & Oltmanns, 2012; Quirk et al., 2016), as suffering from a personality disorder has been identified as a key predictor of recurrent high ED use (Gentil, Grenier, Vasiliadis, Huỳnh, & Fleury, 2021). Furthermore, in our sample high ED users showed higher suicidal ideation in comparison to non-high ED users; while on one hand the number of visits to the ED has been found to be an independent risk factor for suicide (Kvaran, Gunnarsdottir, Kristbjornsdottir, Valdimarsdottir, & Rafnsson, 2015), suicidal ideation is a core feature of severe personality disorder and represents for these patients a common reason for visiting the ED (Moukaddam, AufderHeide, Flores, & Tucci, 2015; Moukaddam, Flores, Matorin, Hayden, & Tucci, 2017). Recent interest has risen in consideration of a possible overlap between personality and somatoform disorders, as they share common risk factors (e.g. trauma, gender), mechanisms (e.g. emotion dysregulation, dissociation) and repercussions (e.g. healthcare utilization, functional impairment) (Dixon-Gordon, Whalen, Layden, & Chapman, 2015; Quirk et al., 2016; Sansone, Wiederman, & McLean, 2008; Schmaling & Fales, 2018; van der Kolk et al., 1996; van Dijke, 2012). Previous studies have reported high rates of personality disorders among FND (Binzer & Kullgren, 1998; Patron et al., 2022; Roelofs, Spinhoven, Sandijck, Moene, & Hoogduin, 2005; Scévola et al., 2013), especially when referred to psychiatric evaluation (Jain & Foy, 2017), and our findings confirm that the presence of comorbid dysfunctional personality disorders/traits are related to poorer outcomes in FND (Binzer & Kullgren, 1998; Chandrasekaran, Goswami, Sivakumar, & Chitralekha, 1994; Kanner et al., 1999; Ljunberg, 1957; Mace & Trimble, 1996).

Specific illness beliefs at baseline were found to be associated with specific patterns of healthcare utilization at follow up. In fact, having not accepted the diagnosis of FND (i.e. believing of suffering from a difficult to find damage to the nervous system or from a very rare or mysterious disease) at baseline was related to a trend towards an increased number of ED accesses, specialist medical visits and instrumental examinations, while the belief of suffering from a disease of another system (e.g. suffering from a rheumatic disease) was related to a trend towards more specialist medical visits and less instrumental examinations; finally, the belief of having received a correct diagnosis was related to a trend towards a decrease in ED accesses at follow up. These findings highlight the importance of confidence in the diagnosis of FND for patients, as the major predictor in symptom improvement is acceptance of the diagnosis prior to further treatment (Carton, Thompson, & Duncan, 2003; Jankovic, Vuong, & Thomas, 2006; Sharma & Espay, 2022; Silva et al.,

2001; Thomas, Dat Vuong, & Jankovic, 2006). Additionally, we found that attributing the cause of the condition to stress or worries was related to a trend towards less specialist medical visits and instrumental examination at follow up. These results are similar to those found by Sharpe et al., where illness beliefs in FND were found of key importance in predicting outcome at 1 year follow-up, with the only strong independent baseline predictors being patients' beliefs of non-recovery, non-attribution of symptoms to psychological factors and the receipt of illness-related financial benefits (Sharpe et al., 2010). Finally, we found that feeling understood by doctors and healthcare professionals was related to a trend towards less ED visits at follow up; this last result underscores the importance of good doctor-patient communication and explanation of the diagnosis (Sonis, Aaronson, Lee, Philpotts, & White, 2018; J Stone et al., 2016).

Interestingly, we found that attributing the cause of the condition to emotions that are difficult to manage was related to a trend towards a decrease in specialist medical visits and an increase in ED accesses. A possible explanation for this paradoxical result might be related to emotional dysregulation. There is in fact growing evidence that emotion processing is altered in FND patients (Aybek et al., 2015; Del Río-Casanova et al., 2018; Fiess, Rockstroh, Schmidt, & Steffen, 2015; Jungilligens, Paredes-Echeverri, Popkirov, Barrett, & Perez, 2022; Sojka, Bareš, Kašpárek, & Světlák, 2018; Sojka et al., 2019; Voon et al., 2010). These findings are also in line with those previously discussed regarding high ED users.

There are other findings deserving to be discussed. A general result of the research is the high medical and psychiatric comorbidity rates in patients affected by these conditions. We found that 27.1% of the sample was affected by another neurologic disorder, while the majority of the patients had at least one medical comorbidity. These data, in line with previous literature (J Stone et al., 2012), highlight the importance of a multidisciplinary approach to these patients where, in order to maximize results and minimize errors, useless and potentially iatrogenic examinations or procedures, the combined involvement of different specialists should be strongly encouraged (Alvarez Garcia, Gomez Martín, Molina Liétor, Cuevas Iñiguez, & Sanz Giancola, 2022; Demartini et al., 2014). The need for a collaborative-care approach is underscored by the high rate of other functional symptoms such as functional gastrointestinal disorders, noncardiac chest pain, functional respiratory disorders and fibromyalgia we found in the research; this is also confirmed by other studies regarding comorbidities in FND patients (Fasano et al., 2012; Matsumoto et al., 2013; Persson et al., 2015) and it is in line with research showing that a major predictor of a likely functional disorder is a previous history of functional disorder (Hotopf, Mayou, Wadsworth, & Wessely, 1999). Indeed, in our sample, the majority of the patients reported a previous episode of conversion disorder.

In our sample, only one patient was excluded from the study because he developed an organic disorder (atypical parkinsonism) that could better explain the symptoms at the follow up. While on one hand *psychogenic* movement disorders have been associated with prodromal stages of Parkinson's disease, as they can precede the onset of this condition in up to a quarter of the cases (Ambar Akkaoui, Geoffroy, Roze, Degos, & Garcin, 2020; Onofrj et al., 2022; Wissel et al., 2018), this misdiagnosis rate (1/26= 3.8%) is comparable to previous literature and to the rate of misdiagnosis for other neurological conditions (Jon Stone et al., 2005).

As a more specific result, half of the sample reported a positive psychiatric history, with anxiety disorders and depression being the most common diagnoses; these rates are comparable to previous studies (A. J. Carson et al., 2000; Alan Carson et al., 2011; Patron et al., 2022). Data obtained from BSI-53 showed that about a third of the sample was affected by relevant active psychopathological symptoms, with psychoticism, a personality trait characterized by coldness,

egocentrism, impulsivity, aggressiveness, antisocial behavior and lack of empathy, being the most represented. This finding reflects the importance of this personality condition in relation to somatic symptoms, as showed by other studies (Fowler et al., 2022; García-Torres & Alós, 2014).

Patients with a previous history of FND reported higher levels of Anxiety, Hostility, Psychoticism and personality functioning impairment. These data, while once again highlighting the importance of assessing personality functioning in psychosomatic conditions (Wagner-Skacel, Matzer, Kohlhammer-Dohr, Dalkner, & Jauk, 2022), can be interpreted in different ways. A first explanation may reflect the fact that a previous history of psychopathology (i.e. anxiety and depression) increases the risk of suffering from a functional disorder (Katon W, Sullivan M, 2001); these patients might therefore be prone to develop somatic symptoms because of previous psychopathology or life events. Alternatively, patients with a previous history of FND might represent a specific subgroup of patients with a tendency to express (convert) psychological distress into physical symptoms; the fact that they showed higher impairments in personological variables which are quite stable over time, such as Psychoticism and Global Assessment of Functioning Score might support the latter hypothesis. Emotional and personality disorders are indeed predisposing factors for the development of FND (A Carson & Lehn, 2016) and both personality disorders and impairments in emotional processing are quite common in FND (Patron et al., 2022; Sojka et al., 2018). With this view in mind, Hostility and Anxiety symptoms might be the expression of emotion dysregulation (Del Río-Casanova et al., 2018).

Another relevant finding concerns suicidality. While only one patient actively tried to commit suicide during the following year, we found a prevalence of 12% of individuals considered at risk for suicide attempt and of 6.2% for patients with a past history of suicide attempts; these rates are similar to those reported in other studies (Diprose, Sundram, & Menkes, 2016; Goldstein et al., 2020; Patron et al., 2022; Torres et al., 2021). Consistently with other researches, patients considered at risk for suicidal behavior, besides showing higher levels of psychopathology, had more stressful life events, higher scores of emotional neglect and lower levels of secure attachment compared with patients who were not found at risk (Howarth et al., 2020; Stickley et al., 2020; Zortea, Gray, & O'Connor, 2021); this highlights the importance of the assessment of these conditions as part of a comprehensive psychiatric evaluation (A Carson et al., 2016). As for other medical illnesses (Kim et al., 2022; Xiong et al., 2022) and, more relevantly, for most of neurologic disorders (Alejos, Vázquez-Bourgon, Santurtún, Riancho, & Santurtún, 2023), in our sample patients with suicidal ideation had a shorter duration of illness. This finding might reflect the fact that suicide ideation might arise early as a result of not yet developed effective disease coping strategies or, more in general, as a crisis during the process of disease adaptation.

A striking result is the prevalence of 42.6% of childhood abuse; this rate is comparable to what found in another research (Roelofs et al., 2005). As expected, patients with a history of childhood abuse had worse scores in terms of psychopathology, personality functioning, alexithymia and attachment. Furthermore, alexithymic patients showed higher impairments in personality, psychopathological and attachment measure, highlighting the interplay between alexithymia, childhood abuse, psychopathology, personality traits and attachment styles (Berenbaum, 1996; Farooq & Yousaf, 2016; Topciu et al., 2009; Van der Feltz-Cornelis et al., 2020; Williams et al., 2018).

Further findings regard the presence of fatigue, a common symptom of FND. We found that 49.6% of patients were affected by symptoms of fatigue; these patients displayed higher levels of "self" pathology (i.e. higher impairments of functioning in Identity and Self-Direction), Depression, Interpersonal Sensitivity, a more insecure attachment style and a higher number of non

neurological functional symptoms. While it has been suggested that any link between personality and fatigue may be confounded by the presence of depression (Wood & Wessely, 1999), personality functioning and traits have been found to be important in many conditions (Lazeron-Savu, Lenaert, Ponds, & van Heugten, 2022; Matesic & Marcinko, 2020; Stephan, Sutin, Luchetti, Canada, & Terracciano, 2022). This association has been longtime indicated, as some authors even hypothesized an "acute neurasthenic syndrome" (Verhaest & Pierloot, 1980) (i.e. a decompensation in individuals having a premorbid psychaesthenic character). However, only recent evidence showed that somatoform disorders are highly characterized by self-pathology (Macina, Bendel, Walter, & Wrege, 2021), supporting our results. Furthermore, there is evidence that personality disorders are predictive of worse physical outcomes, including fatigue (Powers & Oltmanns, 2012).

There are some limitations in our study that should be mentioned. First of all, the small sample size of our population does not allow us to generalize our results. A future study, which will include more patients at follow up, will be considered to overcome this important limitation and give more robust and generalizable results.
With regards to FND and personality dimensions, some authors claimed that caution should be warranted because of the difficulty of defining personality in a reliable and valid manner and because studies exploring the effect of this construct have been often made on selected groups of patients (A Carson & Lehn, 2016). While FND patients referred for psychiatric evaluation might be prone to selection bias (i.e. carrying higher levels of psychopathology compared with those encountered only in neurological setting), we performed a psychiatric evaluation for all patients encountered in ED and general hospital settings; we acknowledge, though, that the fact that the least severe patients could have not be referred is another limitation of the study. As far as specific measuring tools are concerned, there has been increasing evidence that a dimensional approach is favored over the categorical conceptualization of personality disorders (Clark, 2007; Kraemer, Noda, & O'Hara, 2004; Widiger & Trull, 2007) because of better reliability and validity, as the latter is characterized by the temporal instability of the diagnoses and significant overlap among diagnostic categories.
Another important limitation of the study is the absence of severity scales. Even though some specific clinical outcome measures are available for FND (Pick et al., 2020), our sample was not homogeneous and most of the patients experienced more than one FND symptom, preventing us from using specific severity scales.

In conclusion, this study provides information about the interplay between psychosocial variables and patterns of healthcare utilization in patients affected by FND. The data presented here confirm the importance of a comprehensive evaluation by the mental health professional who should not underrate the role of personological dimensions. The findings here discussed may support future research on the topic and pave the way for structured interventions aimed at reducing healthcare costs and promote well-being in patients affected by these complex conditions.

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