

THE PROTECTIVE ROLE OF PERCEIVED SOCIAL SUPPORT AND LIFE SATISFACTION IN DEPRESSION, ANXIETY, AND DISSOCIATIVE SYMPTOM SEVERITY AMONG PATIENTS WITH FUNCTIONAL NEUROLOGICAL SYMPTOM DISORDER: A CROSS-SECTIONAL STUDY

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Abstract

Background: Functional Neurological Symptom Disorder (FNSD) is a neuropsychiatric disorder that results in disabling neurological symptoms that are not readily attributable to structural neurological disease. Depression, anxiety, and dissociative symptoms are common in FNSD, significantly contributing to disability and reduced quality of life. Research to date has concentrated largely on symptom mechanisms and vulnerability, whereas comparatively less attention has been given to psychosocial protective factors such as perceived social support and life satisfaction that may buffer emotional distress.

Objective: To investigate the associations between perceived social support, life satisfaction, depression, anxiety, and dissociative symptom severity in patients with FNSD.

Methods: A cross-sectional analytical study was carried out with 700 patients with FNSD attending the psychiatry department of Mardan medical complex tertiary care teaching hospital in Khyber Pakhtunkhwa, Pakistan. Perceived social support, life satisfaction, anxiety, depression, and dissociative symptoms were assessed using standardised questionnaires. Because a proportion of participants had limited or no formal literacy, all instruments were administered by trained clinicians in a structured interview format rather than being self-completed. Pearson product-moment correlations were computed.

Results: Higher perceived social support and greater life satisfaction were significantly related to lower depression, anxiety, and dissociative symptom scores (all $p < .01$). Dissociative symptom severity showed the strongest inverse associations, with life satisfaction ($r = -.56$) and perceived social support ($r = -.53$).

Conclusions: Psychosocial resources appear to play a protective role in patients with FNSD. Interventions targeting social relationships and subjective well-being may reduce emotional distress and improve clinical outcomes.

1. Introduction

The disorder formerly known as conversion disorder, now classified as functional neurological symptom disorder (FNSD), is one of the most difficult conditions encountered in neurology and medicine in general. It involves neurological symptoms such as weakness, paralysis, tremors, non-epileptic seizures, sensory symptoms, gait abnormalities, speech impairments, and visual symptoms, which do not fit with known neurological diseases. There has been a significant paradigm shift in the conceptualization of the disorder, with a focus on positive neurological signs rather than diagnosis by exclusion (American Psychiatric Association [APA], 2022; Espay et al., 2018; Hallett et al., 2022).

FNSD occurs at any age but is most frequently seen in young adults and women and is responsible for a large percentage of referrals to neurology outpatient clinics and EDs throughout the world. Functional neurological symptoms represent approximately 5-16% of all new consultations for neurology, and functional seizures are one of the more common differential diagnoses of epilepsy (Espay et al., 2018). FNSD is prevalent, associated with high rates of functional disability, unemployment, interpersonal dysfunction, frequent hospitalizations and increased health service utilization, and has a high socioeconomic burden (Aybek & Perez, 2022; Stone et al., 2020).

For a long time, FNSD was only thought to be a condition of unconscious psychological conflict, which was adopted in the psychoanalytical paradigm. But advances in the field of cognitive neuroscience have put the disorder in a new light since then. Recent theories of symptom generation include abnormal expectations, attention biases, and abnormalities in the

integration of sensory information (Hallett et al., 2022), especially in the context of models of the modern brain, such as models of predictive processing and models of the Bayesian brain. Functional neuroimaging has been used in studies regularly to reveal changes in connectivity among the emotion regulation network, salience detection network, self-agency network, motor planning network, and the interoceptive awareness network (Perez et al., 2021). Emerging evidence supports the notion that some psychological and neurobiological mechanisms interact to produce FNSD, rather than it being a malingering or a psychological disorder (Edwards et al., 2023).

Advances in the understanding of neuroscience also have psychiatric comorbidity in focus in the clinical picture of FNSD. Depression and anxiety are among the most common co-occurring conditions and have consistently been linked to poorer prognosis, higher disability, more persistent symptoms, and lower treatment responsiveness (Espay et al., 2018; Stone et al., 2020). Mood and anxiety disorders often precede symptom onset and play a role in maintaining chronicity, affecting attentional processes, threat perception, and body vigilance, and perpetuating functional symptoms via reciprocal psychological and neurophysiological processes.

Another clinically relevant aspect of FNSD is dissociation, defined as disturbances of consciousness, identity, memory, body awareness, and emotional integration (Bernstein & Putnam, 1986). In FNSD populations, somatoform dissociation—disruptions in somatic sensation and functioning that are not related to structural neurological impairment—appears especially relevant (Nijenhuis et al., 1996). Dissociative symptoms have consistently been associated with more severe clinical presentations, poorer

psychosocial functioning, and higher psychiatric comorbidity, and therefore represent an important clinical outcome.

Research on FNSD has, however, been dominated by the identification of vulnerability and risk factors, while considerably less is known about the psychosocial resources that may protect patients from emotional distress. Even though the clinical pictures of patients with similar symptom sets are quite varied, this is probably not accounted for by vulnerability. Therefore, it is crucial to identify modifiable resources that can facilitate resilience and recovery if management is to shift from symptom management to promoting resilience and recovery.

The importance of perceived social support as a protective factor for mental health is well known. Social support, which is the perception that emotional, informational and instrumental support is available from the person's social network, family, friends and significant others, has consistently been associated with reduced depression levels, reduced anxiety levels, improved coping and quality of life in a variety of chronic medical and psychiatric diseases (Chang et al., 2023). The stress-buffering hypothesis (Cohen & Wills, 1985) postulates that supportive relationships attenuate the negative effects of stress by helping to regulate emotions, dampening physiological reactivity, and promoting adaptive coping.

Social support in the context of FNSD is particularly important since there is a high risk of stigma, misunderstanding, and invalidation of patients, as well as uncertainty about the diagnosis (Aybek & Perez, 2022; Stone et al., 2020). Mistrustful interactions with health care providers and inaccurate beliefs about illness can contribute to social isolation, low self-efficacy and/or chronic disability status, while supportive interactions can promote positive coping, treatment adherence, and decrease catastrophic illness interpretations. Nevertheless, empirical research that specifically focused on social support in the FNSD context is still limited,

especially in LMICs, though plausible mechanisms have suggested this.

Life satisfaction is another psychosocial construct which is not well studied in this population. The term life satisfaction is used to describe people's cognitive judgment of the quality of their lives as compared to their own standard of living (Diener et al., 2010). A broad measure of psychological well-being is associated with greater resilience, optimism, adaptive coping, and mental health (Diener et al., 2018). Higher life satisfaction tends to be linked with fewer feelings of sadness, worry, stress, and physical complaints.

Social support and life satisfaction are theoretically different but in close relation to each other. There is a self-reinforcing cycle between social relationships and emotional distress, in which emotional distress lowers the conflicts of emotion, belongingness, and practical support provided by social relationships, and social relationships, on the other side, lower emotional distress (Chang et al., 2023; Sulandari et al., 2024). Concurrently studying these constructs and thus the overall picture of resilience in patients with FNSD.

In the Pakistani context, these relations are of great interest. Collectivistic cultural values indicate a strong sense of family integration, long extended kinship networks and mutual dependence between people, so that expected social support is likely to have the strongest protective effect. Yet, stigma associated with mental illness, lack of access to psychological services and a lack of public awareness of FNSD can limit access to or effectiveness of psychological services. In South Asian populations, functional neurological disorders constitute a significant burden of illness; however, there is limited research with a focus on protective factors that would apply to these populations.

The present study aims to explore the inter-correlation pattern between these variables, namely life satisfaction, depression, anxiety, and perceived social support, and the severity of

dissociative symptoms in a large clinical sample of FNSD patients. It was hypothesized that higher perceived social support and greater life satisfaction would each be associated with lower depressive, anxiety, and dissociative symptom severity. Identifying such modifiable psychosocial factors can inform a more comprehensive treatment plan that extends beyond symptom control to focus on resilience.

Objectives of the Study

1. To examine the relationships between perceived social support, life satisfaction, depression, anxiety, and dissociative symptom severity among patients with Functional Neurological Symptom Disorder (FNSD).
2. To determine the relative strength of the associations of perceived social support and life satisfaction with each of the three symptom domains in patients with FNSD.

Hypotheses of the Study

1. Higher perceived social support is significantly associated with lower depression, anxiety, and dissociative symptom severity among patients with FNSD.
2. Greater life satisfaction is significantly associated with lower depression, anxiety, and dissociative symptom severity among patients with FNSD.

2. Materials and Methods

2.1. Study Design

The relationship between perceived social support, life satisfaction, depression, anxiety, and the severity of dissociative symptoms in patients diagnosed with FNSD was analyzed using a quantitative cross-sectional analytical research design. The cross-sectional method was chosen because the primary objective was to determine the amount and direction of the relationships among sociodemographic and psychosocial protective factors and psychological outcomes in a large clinical sample. The study was reported according to the Strengthening the Reporting of

Observational Studies in Epidemiology (STROBE) recommendations (von Elm et al., 2007).

2.2. Study Setting

Psychiatry department of Mardan medical complex tertiary care teaching hospital of Khyber Pakhtunkhwa, Pakistan was selected as the data collection site. Both urban and rural communities make referrals to this hospital, which is an important center for neurological and psychiatric services in the region. The patients were recruited consecutively after diagnosis by consultant psychiatrists.

2.3. Participants

A total of 700 adult patients with FNSD were recruited in accordance with the criteria of the DSM-5-TR (APA, 2022). Adults (aged 18-60) with a confirmed diagnosis by a consultant psychiatrist who could follow study procedures and give informed consent were eligible to participate in this study.

Patients were excluded if they had a major neurological disease that might account for their symptoms or significant cognitive impairment that would make it difficult to complete the questionnaires, intellectual disability, a psychotic disorder, or a major neurocognitive disorder. Limited formal education or illiteracy was not an exclusion criterion; those who were limited or illiterate were included and supported with a clinician-administered interview (see Section 2.5). A large sample was specifically drawn to provide greater statistical precision and enable multivariable analyses.

2.4. Measures

1. The **Multidimensional Scale of Perceived Social Support (MSPSS)** (Zimet et al., 1988) was used to assess perceived social support. Comprising 12 items with a 7-point rating system ($\alpha = .82$ in the present sample) in family, friend, and significant-other subscale areas.

2. Global cognitive assessment of life was assessed with the **Satisfaction with Life Scale (SWLS)**; Diener et al., 2010), which has 5 items ($\alpha = .72$).

3. The **Generalized Anxiety Disorder 7-item Scale (GAD-7)** (Spitzer et al., 2006) was used to assess anxiety symptoms. The GAD-7 consists of seven items rated in terms of frequency of anxiety symptoms over the past 2 weeks on a 4-point scale (0 = not at all; 3 = nearly every day). Total scores indicate the level of severity of anxiety.

4. Depressive symptoms were measured using the **Patient Health Questionnaire-9 (PHQ-9)** (Kroenke et al., 2001). The PHQ-9 is a tool with 9 items that measure depressive symptoms in the last 2 weeks on a 4-point scale (0: not at all; 3: nearly every day). The higher the total score, the more severe the depression is.

5. The **Somatoform Dissociation Questionnaire (SDQ-20)** (Nijenhuis et al., 1996) was used to assess somatoform dissociative symptoms. The scale has 20 items rated on a 5-point Likert scale (1 = not at all; 5 = extremely), with higher scores indicating more severe somatoform dissociation. The SDQ-20 has been shown to have good internal consistency and construct validity in clinical populations.

2.5. Procedure

Eligible patients were approached after routine diagnostic procedures had been completed. After written informed consent was obtained, the assessment battery was completed in a private setting. Because a proportion of participants had limited or no formal literacy and could not complete written self-report measures, all questionnaires were administered by trained clinicians in a structured interview format: items and response options were read aloud verbatim in the participant's preferred local language, and responses were recorded by the clinician without interpretation or paraphrasing. Literate participants completed the measures themselves in the presence of a clinician, who was available to clarify item wording on request. A standardised administration protocol and prior

training of all administering clinicians were used to minimise interviewer variability. Questionnaires were checked at the point of collection to confirm completeness.

2.6. Ethical Considerations

The study was approved by the institutional ethics committees of the hospital before the data collection. All participants were briefed in detail about the purpose, methodology, confidentiality, and the voluntary nature of participation before they were recruited. Participants were informed in detail about the purpose, methodology, confidentiality, and the voluntary nature of participation before recruitment. It was explained to the participants that if they refused to participate, they would not lose the care that they were receiving. All data were anonymized and kept in electronic databases that are password-protected and can only be accessed by the research team.

2.7. Statistical Analysis

SPSS software was used for data analysis. All the variables were subjected to descriptive statistics; internal consistency reliability (Cronbach's α), skewness and kurtosis values were computed, and assumptions of the distribution were tested before analysis. Pearson product-moment correlations were used to examine bivariate associations.

3. Results

3.1. Sample Characteristics

The sample comprised 700 patients (474 women, 67.7%; 226 men, 32.3%) with a mean age of 24.67 years ($SD = 4.64$). The great majority of the participants were those who were heard for the first time (76.7%) and who lived in rural areas (61.6%). The most frequent types were motor (37.0%) and seizure (functional/non-epileptic) (36.4%), followed by sensory (14.7%) and mixed (11.9%). Data on the full demographic and clinical characteristics are included in Table 1.

Table 1

Demographic and Clinical Characteristics of Participants (N = 700)

Characteristic	n	%
Gender		
Male	226	32.3
Female	474	67.7
FNSD subtype		
Motor	259	37.0
Seizure (functional/non-epileptic)	255	36.4
Sensory	103	14.7
Mixed	83	11.9
Presentation		
First episode	537	76.7
Recurrent	163	23.3
Residence		
Urban	269	38.4
Rural	431	61.6
Occupation		
Student	216	30.9
Unemployed	374	53.4
Employed	110	15.7

3.2. Descriptive Statistics and Reliability

All measures demonstrated acceptable internal consistency ($\alpha = .72-.82$). Skewness and kurtosis values fell within conventional limits

(approximately ± 1), supporting the use of parametric analyses. Means, standard deviations, and reliability coefficients are reported in Table 2.

Table 2

Reliability and Descriptive Statistics of Study Variables

Variable	α	M	SD	Skewness	Kurtosis
Social Support	.82	47.16	14.80	0.01	0.62
Life Satisfaction	.72	20.53	7.41	0.12	0.30
Anxiety	.72	9.97	4.96	-0.22	0.56
Depression	.77	12.87	6.20	-0.22	0.82
Dissociative Symptoms	.72	60.18	10.23	0.09	-0.23

3.3. Correlations Among Study Variables

Bivariate correlations were computed to test Hypotheses 1 and 2 (Table 3). Consistent with H1, higher perceived social support was significantly and inversely associated with anxiety ($r = -.51$), depression ($r = -.46$), and dissociative symptom severity ($r = -.53$; all $p < .01$). Consistent with H2, greater life satisfaction was

likewise inversely associated with anxiety ($r = -.48$), depression ($r = -.39$), and dissociative symptoms ($r = -.56$; all $p < .01$), the last representing the strongest inverse association observed in the matrix. Social support and life satisfaction were themselves moderately and positively correlated ($r = .59$), and both protective resources correlated most strongly, and inversely,

with dissociative symptom severity, supporting their proposed protective role.

Table 3

Pearson Correlations Among Study Variables

Variable	1	2	3	4	5
1. Social Support	—				
2. Life Satisfaction	.59**	—			
3. Anxiety	-.51**	-.48**	—		
4. Depression	-.46**	-.39**	.71**	—	
5. Dissociative Symptoms	-.53**	-.56**	.49**	.47**	—

Note. ** $p < .01$.

4. Discussion

The present study examined perceived social support and life satisfaction as protective factors in relation to depression, anxiety, and dissociative symptom severity in patients with FNSD. Both hypotheses were supported: higher perceived social support and higher life satisfaction were each significantly and inversely related to all three symptom domains. These findings support the biopsychosocial conceptualization of FNSD (Hallett et al., 2022) and highlight the need for positive psychosocial factors for clinical outcomes.

A key finding was that all psychological outcomes showed a negative relationship with perceived social support and that this relationship was very strong. Patients reporting higher support levels reported significantly lower depressive, anxiety, and dissociative symptom levels, which is consistent with the stress-buffering model (Cohen & Wills, 1985) and with previous studies that showed a combination of social support and resilience to buffer and reduce the severity of depressive symptoms (Chang et al., 2023).

Social support may also enable illness acceptance, reduce fears of the symptoms, and increase engagement in multidisciplinary treatment in FNSD. Most importantly, these inverse relationships were found for all three of the symptom domains. Life satisfaction was negatively associated with all the other variables studied, but most strongly with dissociative symptom severity. Life satisfaction is considered a

stable cognitive assessment of overall life satisfaction (Diener et al., 2010), and people with high life satisfaction might have more resilience, more adaptive coping and more optimism (Diener et al., 2018). The greater negative correlation of life satisfaction with dissociative symptom severity as opposed to the other variables tested indicates that life satisfaction may be a unique resilience factor in FNSD, in keeping with the positive psychology approach that positive experiences are more than just coping factors with symptoms.

Further, dissociation was strongly associated with depression and anxiety, as measured by the dissociative symptom severity scale. Also, there was a significant correlation between depression and anxiety, and dissociative symptom severity, suggesting that there is a close relationship between emotional distress and dissociation in this group. The direction of these associations was not determined as the analyses were only bivariate and correlational. This pattern is still reminiscent of predictions-processing models of emotional dysregulation, where persistent emotional dysfunction influences attentional, predicted, and perceptual processes (Hallett et al., 2022). Patients with functional neurological symptoms may have psychiatric co-morbidity, and should be routinely screened for psychiatric conditions, and psychiatric assistance should be given when needed.

There are cultural implications of the findings also. The family system in Pakistan is

collectivistic; thus, the family provides emotional and practical support mainly through relationships, but the stigma surrounding psychiatric disorders and lack of awareness of FNSD may lead to a lower help-seeking rate and a delay in treatment (Aybek and Perez, 2022). Therefore, enhancing supportive family relationships and offering psychoeducation to the patients and caregivers may help with treatment adherence, decrease chronicity, and help to recover patients' functionality.

Overall, the study adds to the knowledge of FNSD by demonstrating that psychosocial resources are related not just to overall wellbeing, but also the severity of core clinical symptoms. The clinician's role should therefore be targeted at protective factors, and how to build resilience and support recovery, as well as symptom reduction.

4.1. Clinical Implications

First, the results support a multidisciplinary approach, considering both neurology and psychiatry, clinical psychology, physiotherapy, occupational therapy, and family interventions, as suggested by Espay et al. (2018) and Stone et al. (2020). Pharmacological treatment may be beneficial for patients with an experience of depression and/or anxiety, but psychosocial treatments focusing on interpersonal functioning, emotional regulation and life satisfaction are likely to be a valuable addition. CBT, ACT, mindfulness-based therapies and structured resilience programmes could help enhance subjective well-being, emotional distress and functional symptoms.

Second, perceived social support and life satisfaction should be routinely assessed in patients with FNSD, as they can inform the understanding of patient resilience and treatment planning.

Third, early identification of patients with low social support or poor life satisfaction may allow targeted intervention before emotional distress escalates into severe dissociative symptomatology.

4.2. Strengths and Limitations

The study has several strengths, including a large clinical sample ($N = 700$) providing substantial statistical precision; recruitment across multiple tertiary centres, yielding a sample broadly representative of the FNSD population in South Asia; the use of standardized and psychometrically validated instruments; the clinician-administered format, which allowed participants with limited literacy to be included and reduced missing data; and the examination of an important evidence gap regarding psychosocial resilience in a South Asian FNSD population.

Several limitations should nevertheless be acknowledged. Causal inferences cannot be drawn from a cross-sectional design. Self-report measures are subject to recall and social-desirability bias, and clinician-administered delivery, although necessary for participants with limited literacy, may have introduced a degree of interviewer effect or social-desirability bias. The analyses were restricted to bivariate correlations, so shared variance among the study variables could not be partialled out, and the relative contribution of each protective resource cannot be determined from these data alone. Biological markers of stress regulation, inflammatory activity, and neuroimaging were not obtained, and personality characteristics, coping styles, treatment adherence, and cultural differences in the expression of social support were not directly measured.

4.3. Future Suggestions

Longitudinal cohort studies are needed to determine whether changes in social support or life satisfaction are associated with long-term symptom remission, relapse, or functional recovery, and to clarify temporal ordering and strengthen causal inference.

Randomized controlled trials testing interventions specifically developed to improve social support, resilience, and subjective well-being in people with FNSD are warranted,

preferably comparing conventional multidisciplinary treatment with psychosocial resilience programmes.

The use of objective biological indicators (stress hormones, inflammatory markers, autonomic function, and functional neuroimaging) would shed light on how psychosocial resources relate to symptom exacerbation.

Multivariate approaches, including regression and structural equation modelling, would allow the unique and joint contributions of social support and life satisfaction to be disentangled, and cross-cultural studies would clarify whether the associations observed here generalise beyond the South Asian context.

4.4. Practical Recommendations

The present results suggest that routine screening for depression, anxiety, dissociation, perceived social support, and life satisfaction should form part of the clinical assessment of FNSD.

Family-centred psychoeducation should be integrated into the multidisciplinary rehabilitation services offered to people with FNSD, so that resilience-building components are delivered alongside symptom-focused treatment.

Hospital-based support groups should be established to help reduce social isolation among people with FNSD.

Public-awareness campaigns should be implemented to address misconceptions about FNSD, reduce stigma, and facilitate early referral. Clinician training should emphasise a biopsychosocial approach to FNSD, and social support and mental health should be integrated into health-policy initiatives promoting multidisciplinary rehabilitation services for people with FNSD.

5. Conclusion

Perceived social support and life satisfaction are protective psychosocial resources that are strongly associated with lower levels of depression, anxiety, and dissociative symptoms in patients with FNSD. Life satisfaction showed the

strongest inverse association with dissociative symptom severity, and both resources were more closely related to dissociation than to any other outcome examined. The results align with current biopsychosocial theories of FNSD and highlight the importance of enhancing psychosocial factors that foster resilience. Incorporating psychosocial assessment, family engagement, and resilience-oriented interventions into the clinical workflow could improve outcomes and support a more holistic, person-centred management of FNSD.

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