MANAGEMENT OF STRESS AND FUNCTIONAL NEUROLOGICAL SYMPTOM DISORDER THROUGH HYPNOSIS

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ABSTRACT

Stress and Functional Neurological Symptom Disorder (FNSD) both have the potential to seriously lower someone's quality of life. As a therapeutic method, hypnosis is a potential way to reduce stress and the symptoms related to FND. The study seeks to evaluate the potential benefits of hypnosis-based interventions in treating symptoms of stress and FNSD. This study also develop and a reliable and valid instrument that can accurately measure the symptoms and severity of FNSD in patients using pilot study. The study was a mix method research design was used in this study. The quantitative phase involved 180 patients diagnosed with FNSD, where the HSS and DASS were used to measure outcomes. Statistical analysis, including Pearson correlation, one-way ANOVA, and non-parametric t-tests, indicated significant improvements in stress levels and FNSD symptoms post-intervention, with hypnosis showing a notable predictive value for symptom reduction. The quantitative data demonstrate significant correlations and predictive values for hypnosis in reducing stress and FNS symptoms. The qualitative phase included in-depth interviews with 20 participants, analyzed through thematic analysis. Themes emerged around the impact of significant life events, relationships between emotional and physical symptoms, the role of support systems, and the perceived effectiveness and comfort of hypnosis as a therapeutic approach. Participants reported a strong sense of safety and control during hypnosis sessions, which facilitated positive psychological and physiological outcomes. The combined findings from both quantitative and qualitative data underscore the potential of hypnosis as a standalone treatment to manage stress and FNSD symptoms effectively, suggesting that it may serve as a valuable alternative in clinical practice. This study provides a basis for integrating hypnosis into therapeutic settings and highlights the need for further research to optimize its application in managing functional neurological symptoms.

Keywords: Hypnosis, functional neurological symptom disorder, management of stress, stress

APPROVAL

This is to certify that this thesis conforms to acceptable standards of scholarly presentation and is fully adequate, in quality and scope, for the fulfilment of the requirements for the degree of Doctor of Philosophy.

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DECLARATION

I, Aisha Kiran, do hereby solemnly declare that the thesis “Management of Stress and Functional Neurological Symptom Disorder through Hypnosis” submitted by me in partial fulfillment of degree in SBS is my original work, I certify that the research work presented in this thesis is to the best of my knowledge my own. All sources used and any help received in the preparation of this dissertation have been acknowledged. I hereby declare that I have not submitted this material, either in whole or in part, for any other degree at this or any other institution.

Name: Aisha Kiran

Signature of Candidate: **Date**: 8 October 2024

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LIST OF ABBREVIATION

ACC	Anterior Cingulate Cortex
ALS	Amyotrophic Lateral Sclerosis
ANOVA	Analysis of Variance
APA	Adjunctive Physical Activity
APA	American Psychological Association
CAU	Care as Usual
CBT	Cognitive-Behavioral Therapy
CD	Chronic Disorder
COR	Conservation of Resources
CRPS	Complex Regional Pain Syndrome
CT	Computerized Tomography
DASS	Depression, Anxiety, and Stress Scale
DLPFC	Dorsolaterall Prefrontal Cortex
DSM	Diagnostic and Statistical Manual of Mental Disorders
EEG	Electroencephalogram
ERI	Effort-Reward Imbalance
FMRI	Functional Magnetic Resonance Imaging
FNSD	Functional Neurological Symptom Disorder
GAS	General Adaptation Syndrome
HPA	Hypothalamic-Pituitary-Adrenal
HSS	Hypnotic Susceptibility Scale
MMPI	Minnesota Multiphasic Personality Inventory
MRI	Magnetic Resonance Imaging
NLP	Neuro-Linguistic Programming

OFC	Orbitofrontal cortex
PET	Positron Emission Tomography
PHQ	Patient Health Questionnaire
PNES	Psychogenic Nonepileptic Seizures
PRIME-MD	Primary Care Evaluation of Mental Disorders
PTSD	Post-Traumatic Stress Disorder
RCT	Randomized Controlled Trial
SMA	Suplementary Motor Area
SMC	Standard Medical Care
SPECT	Single Photon Emission Computed Tomography
SPSS	Statistical Package for the Social Sciences
SRRS	Social Readjustment Rating Scale
TMS	Transmagnetic Stimulation
TPJ	Temporoparietal Junction
UK	United Kingdom
USA	United State
VMPFC	Ventromedial Prefrontal Cortex

CHAPTER 1

INTRODUCTION

1.0 Global Statistics and Background of the Study

Functional Neurological Symptom Disorder (FNSD), previously known as conversion disorder, is a condition where individuals experience neurological symptoms—such as motor or sensory deficits—that cannot be explained by medical or neurological conditions (Fernandez et al., 2024). Globally, FNSD is believed to affect approximately 2-5% of the general population, though underreporting and misdiagnosis are common due to the complex and often misunderstood nature of the disorder (Piliavska et al., 2023). FNSD prevalence rates vary, with higher occurrences reported in women and individuals from lower socioeconomic backgrounds or regions with limited access to mental health services (Stroink et al., 2021).

Research indicates that FNSD is multifactorial, with potential causes including psychological stress, trauma, and underlying mental health conditions like anxiety and depression (Pick et al., 2024). Adverse life events, particularly those involving physical or emotional abuse, significantly increase the risk. Neurological studies also suggest that FNSD might involve functional disruptions in brain regions associated with emotion processing and motor control (Nisticò et al., 2022). The impact of FNSD is substantial, both in terms of productivity and healthcare costs. Individuals with FNSD often experience reduced ability to work, requiring frequent medical consultations, and sometimes lengthy hospitalizations, which strain healthcare resources (Pick et al., 2023). In the U.S. alone, the estimated healthcare costs associated with FNSD are over $20 billion annually. This burden is mirrored in other countries, where healthcare systems struggle with the indirect costs of FNSD,

including disability claims and long-term support services. Given the disorder's impact on productivity and the economy, addressing FNSD with effective diagnostic and treatment approaches is increasingly seen as a global health priority (Humblestone et al., 2021).

Stress affects people's mental, emotional, and physical health and is a complex and ubiquitous part of life (Hammond, 2013). Voon et al. (2016) state that the Hungarian endocrinologist Hans Selye first used the term "stress" in the 1930s, marking the beginning of the 20th century. According to Ali et al. (2015), Selye described stress as the body's generic reaction to any demands, whether good or negative. Acute stress, chronic stress, and episodic acute stress are just a few of the ways that stress may appear. Each has unique traits and effects on a person's health (Demartini et al., 2014).

According to Demartini et al. (2014), stress is a complex phenomenon with a wide range of causes. It may be divided into two categories: internal and external stresses. Environmental stressors include things like interpersonal problems, financial hardships, and work-related stresses. Conversely, personal perceptions, cognitive processes, and coping strategies are associated with internal stresses (Vuilleumier, 2014). An individual's total stress level is influenced by the interaction of these variables (Vanhaudenhuyse et al., 2014). According to Tsui et al. (2017), common external stressors include financial strains, big life events, expectations from society, and responsibilities at work. Perfectionism, self-criticism, and unhealthy coping mechanisms are examples of internal pressures. The intricate relationship between these variables frequently causes an increased stress response, which has a detrimental effect on both physical and mental health (Rafiq & Zaheer, 2019).

Many signs that impact the cognitive, emotional, behavioral, and physical domains can be attributed to stress. According to Finn and McKernan (2019), cognitive symptoms might include trouble focusing, memory problems, and unfavorable thinking habits. Elevated irritability, mood fluctuations, and depressive or anxious sensations are common emotional symptoms. Changes in food habits, sleep patterns, and social disengagement are examples of behavioral symptoms (Gulpek et al., 2013). Stress may cause a wide range of physical symptoms, from headaches and tense muscles to digestive disorders and heart difficulties. Chronic stress has been associated with long-term negative health effects, such as a heightened risk of immune system suppression, mental health issues, and cardiovascular illnesses (Deeley, 2016a).

The complex interactions between the neurological and endocrine systems provide the physiological underpinnings of stress. Stress chemicals like cortisol and adrenaline are released, triggering the stress reaction, sometimes known as the "fight or flight" response (Kassymova et al., 2018). By rerouting energy resources and increasing consciousness, these hormones prime the body to respond to impending dangers. On the other hand, prolonged exposure to stress can cause dysregulation of these systems, which can exacerbate a number of health problems, including as immunological suppression, mental health disorders, and cardiovascular illnesses (Varvogli et al., 2011).

Stress has a strong psychological foundation in addition to its physiological aspects. How stress seems depends in large part on individual variations in coping strategies and stress perception (Pallavicini et al., 2016). The way that people react emotionally and behaviorally to stress is influenced by cognitive appraisals, in which they assess the importance and controllability of stressors (Stults-Kolehmainen &

Sinha, 2013). The dynamic aspect of stress and coping is highlighted by Lazarus and Folkman's transactional model of stress, which emphasizes the ongoing interaction between the individual and the environment (Shah et al., 2015).

Experiences with stress are greatly influenced by the larger psychosocial context. Stress is more common and has more effects depending on a person's socioeconomic situation, work environment, and interpersonal interactions (Santos-Ruiz et al., 2017). The fast-paced developments in society and technology that define contemporary life's expectations bring with them new pressures and difficulties. In particular, work-related stress has become a widespread problem. Factors such as job instability, extended work hours, and a lack of control over one's work are known to increase stress levels (Alkhawaldeh et al., 2020).

Stress experiences are significantly shaped by cultural variables as well. The occurrence and manifestation of stress-related diseases can be influenced by the unique stressors and coping strategies seen in various cultures (Anagnostouli et al., 2018). While individualistic cultures may promote candid admission of stress and seeking professional assistance, collectivist civilizations may place a higher value on communal peace than on an individual's ability to articulate their stress (Saeed et al., 2019).

The way humans live, work, and communicate has changed at a rate never seen before due to technology's fast advancement. Though technology has improved productivity and connectedness, it has also brought out new strains, such digital burnout, information overload, and the indistinct line between personal and professional life (Klainin-Yobas et al., 2015). A 24/7 lifestyle that can increase stress levels is fostered by social media's widespread influence and cellphones' ability to

provide continual contact. It is well recognized that persistent stress is a significant risk factor for the development of mental health conditions such anxiety, depression, and post-traumatic stress disorder (PTSD) (Akter & Islam, 2017). According to the neurobiological processes that link stress and mental health, early intervention and comprehensive techniques for mental health are essential (Blumenthal et al., 2016). To comprehend stress, one must investigate the coping strategies people use to deal with life's obstacles. The long-term effects of stress on health can be influenced by the adaptive or maladaptive nature of coping mechanisms. The capacity to overcome hardship and recover from it is a key component in evaluating an individual's resilience and ability to withstand life's challenges. Reducing the harmful effects of stress requires identifying and supporting healthy coping mechanisms (Santos-Ruiz et al., 2017).

Research from the UK and continental Europe has shown that symptoms only partially explained by organic illness account for one-third of new patients treated in neurology clinics (Stroink, 2024). Functional Neurological Symptom Disorder (FNSD), also known as Functional Neurological Disorder (FND) or Conversion Disorder, affects a significant portion of the global population and presents a complex challenge in both diagnosis and treatment. In an analysis of all patients who arrived at a hyperacute stroke unit with an acute stroke, 8.4% had FNDs. According to estimates, FNDs cost society and the health system more than £11 million annually (Thomson, 2014). According to the Department of Health England, the annual cost of medically unexplained symptoms is estimated to be £17.6 billion to the economy, with the National Health Service bearing the brunt of direct costs of £3.1 billion, productivity losses of £5.2 billion, and reduced quality of life costs of £9.3 billion (Velazquez-Rodriquez & Fehily, 2023). Therefore, FND is a significant issue for health and social

services, leading to decreased productivity, a worse standard of living, and a significant financial burden (Wegrzyk et al., 2018).

Epidemiological data suggest that FNSD symptoms are present in approximately 4-12 individuals per 100,000 each year worldwide, with a higher prevalence observed in women and those with a history of trauma or chronic stress (Santos-Ruiz et al., 2017). According to Finn and McKernan (2019), this disorder manifests through a range of neurological symptoms, such as paralysis, tremors, and seizures that lack a clear organic cause and cannot be fully explained by traditional medical diagnostics. In terms of healthcare impact, FNSD patients often require extensive diagnostic testing and consultations across multiple medical specialties, which contributes to significant healthcare costs. The economic burden is profound; for example, in the United Kingdom alone, FNSD-related healthcare costs are estimated to exceed £3 billion annually, including direct costs to the National Health Service (NHS) and indirect costs from productivity losses due to disability and reduced quality of life (Alkhawaldeh et al., 2020). These global statistics underscore the critical need for effective and accessible treatments for FNSD, both to alleviate patient suffering and to reduce the associated healthcare and societal costs (Coogle et al., 2021).

According to Miani et al. (2019), hypnosis is a transient state of altered attention in which the patient may be induced by another person and exhibit a range of phenomena either spontaneously or in response to verbal or other stimuli. These occurrences include altered states of consciousness and memory, heightened receptivity to suggestion, and the elicitation of reactions and thoughts from the subject that are not characteristic of their normal mental state (Palsson et al., 2002). Moreover, the hypnotic state may be used to induce and eliminate symptoms such anesthesia,

muscular paralysis and stiffness, and vasomotor alterations (Ogrizek et al., 2023). As of right now, there have only been two published reports of randomized controlled trials using hypnosis to treat functional symptoms (somatoform disorder and conversion disorder) (Revell, 2019). In one, hypnosis was used to improve recovery above waiting list controls whereas in another, a thorough treatment program with and without hypnosis was compared and no further effect was discovered (Sawni & Breuner, 2017).

FNSD is characterized by paralysis, vision loss, and other nervous system symptoms that are not well explained by a physical injury or disease. Symptoms usually emerge unexpectedly following a period of physical, emotional, or mental distress or psychological struggle. According to Coogle et al. (2002), FNSD is thought to be the body's reaction to a stressful physical or emotional experience. Research has indicated possible changes in the brain that may be related to the symptoms of the condition. Testing to rule out other sources of symptoms and searching for specific symptoms that individuals with the condition share are two ways to identify FNSD (Deeley, 2016b). Functional Neurological Symptom Disorder (FNSD), also known as Conversion Disorder, is a condition where patients experience neurological symptoms that cannot be attributed to any identifiable medical or neurological cause. These symptoms include motor or sensory dysfunctions such as paralysis, tremors, gait abnormalities, or sensory disturbances like vision loss or numbness. Despite extensive medical testing, no organic basis is found to explain these symptoms. This suggests that psychological factors play a significant role in the manifestation of FNSD (Akter & Islam, 2017).

FNSD has a rich history, dating back to ancient times when it was often misunderstood and attributed to supernatural causes. The term "hysteria" was historically used to describe what we now recognize as FNSD. In the early 20th century, psychoanalysts like Sigmund Freud explored the psychological underpinnings of these symptoms, proposing that unconscious conflicts were converted into physical symptoms (Stults-Kolehmainen & Sinha, 2013). Modern medicine continues to evolve in its understanding, recognizing FNSD as a complex interplay of psychological and neurological factors. Experts believe that FNSD results from the brain's attempt to cope with emotional stress, even if the precise source of the condition is yet unknown. It is nearly always brought on by mental illnesses and stressful circumstances. Compared to males, women are more likely to have it. Additionally, those who struggle to communicate their feelings or who have previously suffered emotional stress are more likely to experience it (Finn & McKernan, 2019).

The exact cause of FNSD remains elusive, but it is believed to result from a combination of biological, psychological, and social factors. Risk factors include a history of trauma, stress, and psychiatric conditions such as anxiety and depression. Individuals who have difficulty expressing emotions or those with a history of abuse are more susceptible. The disorder often manifests after a significant stressor or psychological conflict, serving as a maladaptive coping mechanism. FNSD symptoms are varied and can affect any part of the body, making diagnosis challenging. Common presentations include non-epileptic seizures, weakness or paralysis, abnormal gait, and sensory disturbances such as blindness or numbness. These symptoms are real and distressing to the patient but lack a consistent neurological or medical explanation. They often disrupt daily functioning and lead to significant distress and disability (Akter & Islam, 2017).

The category of Physical Side Effect and Related Clutters in the current Diagnostic and Statistical Manual of Mental Disorders, Fifth Version (DSM-5) contains change clutter (O'Neil, 2018). It includes signs or deficits that impede an intended engine or practical work and point to a neurologic illness or another common restorative ailment. Nevertheless, following a thorough evaluation that consists of a thorough neurologic examination in addition to the necessary laboratory tests and radiographic symptomatic tests, it is either discovered that the symptoms are not consistent with a neurologic condition or that the results of the examination are at odds with the patient's complaint (Terhune & Oakley, 2020). Diagnosing FNSD involves ruling out other medical and neurological conditions that could explain the symptoms. The DSM-5 criteria require a thorough medical history, neurological examination, and appropriate testing. Key diagnostic features include the inconsistency of symptoms with known neurological or medical conditions and the presence of psychological factors that are temporally related to the onset or exacerbation of symptoms. The diagnosis is often one of exclusion, which can be frustrating for patients and clinicians alike (Stults-Kolehmainen & Sinha, 2013).

In impacts in routine neurologic work that cannot be attributed to either a neurologic or a natural therapeutic origin. Some common adverse effects of transformation include visual impairment, diplopia, and loss of mobility, dystonia, and psychogenic nonepileptic seizures. Vanhaudenhuyse et al. (2014) list the following symptoms: anesthesia, aphonia, forgetfulness, dementia, lethargy, gulping problems, engine tics, mental excursions, pseudocyesis, and difficulty walking. They also mention natural therapy conditions and uneasy. Recent research has provided some insights into the neurobiological basis of FNSD. Functional neuroimaging studies have shown abnormal brain activity in areas related to motor and sensory processing,

suggesting a disruption in the normal functioning of these networks. These findings support the idea that FNSD is not purely psychological but involves genuine alterations in brain function, bridging the gap between mind and body (Stults-Kolehmainen & Sinha, 2013). Treatment of FNSD is multidisciplinary, involving neurologists, psychiatrists, psychologists, and physical therapists. Cognitive-behavioral therapy (CBT) is commonly used to address the psychological aspects of the disorder, helping patients understand the connection between their emotions and physical symptoms. Hypnotherapy has also shown promise in managing symptoms by facilitating relaxation and helping patient's access subconscious thoughts and emotions. Physical therapy is crucial for regaining mobility and function (Terhune & Oakley, 2020).

The prognosis for FNSD varies widely among individuals. Some patients experience a complete resolution of symptoms with appropriate treatment, while others may have persistent or recurrent symptoms. Early diagnosis and intervention are associated with better outcomes. Chronic cases can lead to significant disability and impairment in quality of life, highlighting the importance of a comprehensive treatment approach. FNSD can have a profound impact on a patient's psychosocial well-being (Stults-Kolehmainen & Sinha, 2013). The unpredictable and often debilitating nature of the symptoms can lead to social isolation, difficulties in maintaining employment, and strained relationships. The stigma associated with the disorder, due to its psychological components, can further exacerbate feelings of shame and inadequacy. Support from family, friends, and healthcare providers is crucial in managing these challenges (Akter & Islam, 2017).

The clinical picture and related contextual circumstances for the majority of people with conversion disorder are complicated. According to Satsangi and Brugnoli

(2018), patients who often seek tertiary health services have severely incapacitating illnesses, and their care may be challenging, expensive, and time-consuming. Moreover, researchers sometimes concentrate on certain symptoms (such as weakness, paralysis, or psychogenic nonepileptic seizures) that are included in the diagnostic when studying people classified as having chronic disorder (CD), making it challenging to draw conclusions from these patients (Deeley, 2016). In chronic pain syndromes, differentiating between psychological and physical variables is still challenging since specific diagnostic tools are frequently lacking and clinical judgment's reliability is still questionable.

The following surgical procedures have also been reported to be present in cases of conversion disease. For instance, a case study (LaFaver, LaFrance, et al., 2020) described the emergence of CD in a patient who had complicated regional pain syndrome and had a spinal cord stimulator implanted. Significant parallels have also been observed by others in the psychological characteristics of individuals with CD and complex regional pain syndrome (CRPS) (Tsui et al., 2017). According to this study, patients in both groups showed high ratings for sadness and hysteria on the Minnesota Multidimensional Personality Inventory. Additionally, there were substantial rates of psychopathology comorbidity in both groups, specifically in relation to depression and PTSD. The two illnesses that Coogle et al. (2021) discovered to be comparable suggest that old categories (such as organic vs. psychiatric) need to be reexamined.

There appears to be an association with symptoms as well, even if conversion disorder does not encompass the wider range of generic, unexplained medical complaints, including persistent fatigue or nausea. For instance, Espay et al. (2018)