Anxiety and depression in patients with multiple sclerosis: The mediating effects of perceived social support

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ABSTRACT

Background: Social support has been identified as a buffering or intervening variable in stressful life events. Research has demonstrated that greater social support is associated with better mental health in multiple sclerosis (MS), but little is known about its links to specific aspects of mental health. We therefore investigated if and how perceived social support modulates depression, anxiety and fatigue in patients with MS.

Methods: We recruited 112 patients with MS from three French hospitals and administered a demographic and clinic interview, and self-report measures of perceived social support (Multidimensional Scale of Perceived Social Support), depression and anxiety (Hospital Anxiety and Depression Scale), and fatigue (Fatigue Severity Scale). We then analyzed the relationships between these domains using path analysis.

Results: The causal path model provided an excellent fit for the data ($\chi^2 = 9.8$, $p = .778$, standardized root mean square residual = 0.043, comparative fit index = 1.00). Results indicated that the level of social support from friends is a predictor of anxiety symptomatology. Thus, anxiety may have both a direct and an indirect impact on fatigue and depression levels.

Conclusions: This study highlights the important roles played by perceived social support and anxiety in MS. These should be key pharmacological and non-pharmacological targets for optimizing patient care. (NCT 02-880-553)

1. Introduction

Multiple sclerosis (MS) is characterized by the occurrence of widespread lesions or plaques in the brain and spinal cord (Compston & Coles, 2008). Because of these lesions and their unpredictable locations, MS has a broad range of motor, visual, cognitive, and neuropsychiatric symptoms.

Owing to the physiopathology of the disease and its unpredictable course, psychological and psychiatric disorders are common features of MS. Relative to individuals with similar degrees of disability, patients with MS have an elevated incidence and prevalence of psychological and psychiatric symptoms (Beiske et al., 2008; José Sá, 2008; Kinsinger, Lattie, & Mohr, 2010; Marrie et al., 2015). MS also has psychosocial consequences, disrupting life goals, employment, relationships, and daily living activities (Morrow et al., 2010; Simmons, 2010; Smith &

Arnett, 2005).

Depression and anxiety are among the most common psychiatric disorders in MS, and their association increases the risk of suicide. *Depression* concerns 26-55% of patients, according to the literature, with a lifetime prevalence of around 50% (Feinstein et al., 2014; Patten et al., 2017; Siegert & Abernethy, 2005; Wood et al., 2013). Severe depression is more prevalent in MS (15.7%) than it is in either the general population (7.4%) or patients with other chronic diseases (9.1%), suggesting a direct effect of the disease on depressive symptoms (Chwastiak et al., 2002; Patten et al., 2003; Sadovnick et al., 1996). Although the etiology of depression in MS remains unclear, it appears to stem from the interaction of biological, psychological and social factors. High levels of *anxiety* can occur even in the early stages of MS, with prevalence rates ranging from 43% to 70% (Boeschoten et al., 2017; Butler et al., 2016; Chahraoui et al., 2008; Korostil & Feinstein,

2007; Montel and Bungener, 2007; Wood et al., 2013). Both depression and anxiety are associated with increased thoughts of self-harm, impaired social functioning, lower quality of life, and more somatic complaints, leading to greater utilization of healthcare services (Al-Asmi et al., 2015; Feinstein et al., 1999; Wollin et al., 2013). Gay et al. (2017) and Gay et al. (2010) showed that anxiety and functional status (disability) are independent predictors of depressive symptoms, with anxiety being a strong predictor. This relationship is modulated by social support and alexithymia (Gay et al., 2010).

Given the impact of anxiety and depression on disease course, health, and quality of life, research has focused on the factors that protect against them and predict their emergence. Illness-related factors (severity of disability, extent of neurological lesions, disease duration) are often weaker predictors of psychosocial adjustment (Chwastiak et al., 2002) than psychological factors (Kirchner & Lara, 2010; Thomas et al., 2006). Among these, social support is an important contributor to positive social adjustment (Dennison et al., 2009).

Social support refers to the emotional, instrumental and informational support that people receive from others to cope with their stressful life events. Social support providers include family members, friends and significant others. *Significant others* include coworkers, healthcare professionals and other patients. Social support influences morbidity, mortality, and quality of life in both the general and chronic disease populations (Bruchon-Schweitzer & Boujut, 2014). It has a direct and positive effect on physical and mental health and/or acts as a buffer, protecting against the negative effects of stressful life events. In patients with MS, lower social support is associated with higher anxiety and depression, and lower quality of life (Dennison et al., 2009). Although social support is frequently studied in MS, little is known about either the nature of its relationship with mood and emotional factors or differences according to provider (e.g., relative, friend, or healthcare professional). Some studies showed that poor perceived support from friends and family members was strongly associated with depressive symptomatology (Jensen et al., 2014; McIvor et al., 1984). More recently, social support was found to be significantly related to mental health outcomes regardless of the source of that support (Koelmel et al., 2017). Krokavcova et al. (2008) showed that social support from significant others has a positive impact on perceived physical health, while that from family and friends had a positive impact on perceived mental health.

Given recent findings indicating that anxiety predicts depression in MS (Gay et al., 2010, 2017), together with the acknowledged role of perceived social support in depression and mental health, we explored whether perceived social support predicts the relationship between anxiety and depression in MS, using path analysis. We also took fatigue and disability into account, as several studies have highlighted the impact of these variables. We considered perceived social support from three sources: family members, friends, and significant others. Better knowledge of how these different variables interact could inform the design of psychological and therapeutic education programs aimed at preventing anxiety and depression.

2. Method

2.1. Participants

We recruited 112 patients with clinically definite MS (Polman et al., 2011) during their regular appointments at three French hospitals (Reims University Hospital, Porte Verte Hospital in Versailles, de Rothschild Ophthalmology Foundation in Paris). Exclusion criteria were (a) history of alcohol or drug abuse, (b) history of major psychiatric illness other than major depressive episode, (c) history of a neurological disorder other than MS, (d) significant visual or motor impairment that would interfere with testing, and (e) relapse within the past 6 weeks.

2.2. Measures

2.2.1. Sociodemographic and clinical variables

Patients were asked to provide basic demographic information, including their sex, age, education level, marital status, and employment status. Clinical and disease-specific variables (level of disability, type of MS, and time since diagnosis) were obtained by neurologists. Patients' level of disability was measured with the Expanded Disability Status Scale (EDSS; Kurtzke, 1983).

2.2.2. Perceived social support

The Multidimensional Scale of Perceived Social Support (MSPSS, Zimet et al., 1990) is a self-report questionnaire with 12 items assessing perceived social support from family, friends and significant others, rated on a 7-point Likert-like scale ranging from 1 (*Strongly disagree*) to 7 (*Very strongly agree*). Each of the three sources is probed by four items, and subscores range from 4 to 28. A high subscore indicates high perceived social support. The French version of the MSPSS (Denis et al., 2015) is a reliable and valid measure with high internal consistency (Cronbach's alpha > 0.90).

2.2.3. Anxiety and depression

The Hospital Anxiety and Depression Scale (HADS, Zigmond & Snaith, 1983) is a widely used self-assessment instrument for determining the severity of depressive and anxiety symptoms. It comprises 14 items: seven for depression and seven for anxiety. Each item is rated on a 4-point Likert-like scale ranging from 0 to 3, yielding subscores of 0-21. A subscore of 0-7 indicates the absence of anxious/depressive symptoms, a subscore of 8-10 indicates the presence of moderate symptoms (i.e., doubtful cases), and a subscore of 11 or above indicates numerous symptoms of anxiety/depression (i.e., confirmed cases). The French version of the HADS (Untas et al., 2009) has good reliability and discriminant validity (Cronbach's alphas > 0.80). The HADS was developed specifically for use in medically ill populations characterized by *potential somatic confounders*, including MS (Honarmand & Feinstein, 2009). We selected it because the absence of items assessing somatic symptoms (fatigue, insomnia, impaired concentration, pain) limits false positive findings.

2.2.4. Fatigue

The Fatigue Severity Scale (FSS, Krupp et al., 1989) is a nine-item self-assessment questionnaire originally used to assess fatigue among patients with MS or systemic lupus erythematosus. Participants indicate the fatigue they experienced in different situations during the previous week on a 7-point Likert scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). The final score represents the mean value of the nine items. A high FSS score indicates a high level of fatigue. The FSS has good internal consistency (Cronbach's alpha = 0.88) and good test-retest reliability (*r* = 0.84).

2.3. Procedure

After providing demographic information and being assessed on the EDSS by an experienced neurologist, participants completed three self-report measures of perceived social support, depression and anxiety, and fatigue. These took about 30 min to complete. The study was approved by the medical research committee and ethics committee (S.C. 3396) of Tarnier-Cochin Hospital, Ile-de-France. All participants gave their written informed consent, and the study was conducted in accordance with the Declaration of Helsinki.

2.4. Statistical analyses

We used SPSS Version 21.0 for Macintosh to undertake the descriptive and correlational analyses, and AMOS 20.0 for Windows to perform the structural equation modelling for the path analyses.