

FAMILY FUNCTIONING AND DYADIC RELATIONSHIP IN MULTIPLE SCLEROSIS: PRELIMINARY DATA OF AN ITALIAN MULTICENTER STUDY

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Abstract

Introduction: Multiple sclerosis (MS) is a chronic inflammatory and neurodegenerative disease which not only affects physical functioning but is also associated with cognitive impairments and psychological distress. The combination of these symptoms can have a negative consequence on the family functioning (FF) of people living with MS (PwMS), with detrimental effects on couples and their dyadic relationships. In addition, the quality of relationships could be influenced by other factors, such as specific individual characteristics (such as high levels of alexithymia) or social support. For these reasons, we assessed the FF and the quality of dyadic relationships of PwMS and their partners. Specifically, we aimed to investigate the relationships between alexithymia, psychological distress (anxiety and depressive symptoms), perceived social support, dyadic relationships and FF.

Methods: Couples, consisting of PwMS and their respective partners, recruited from several Italian MS centers, were invited to complete an online survey. Measures included: the Brief Family Assessment Measure 3 (FAM3) to assess FF; the Hospital Anxiety and Depression Scale (HADS) for psychological distress symptoms; the Multidimensional Scale of Perceived Social Support (MSPSS) for social support; the Toronto Alexithymia Scale (TAS-20) for alexithymia; the Dyadic Adjustment Scale (DAS) for the quality of dyadic relationships.

Results: In the present study, we analyzed data from 28 couples including 16 women and 12 men with MS and their partners (mean age: 46 years). A statistically significant correlation was found between the DAS scores ($r=.496$, $p<.007$), while no correlation was found between the FAM3 scores of the PwMS and the partner.

The FAM3 scores of the PwMS were significantly correlated with the DAS ($r=-.643$, $p<.01$), MSPSS ($r=-.624$, $p<.01$) and TAS-20 scores ($r=.424$, $p<.025$) as well as with the HADS-Depression scores ($r=.493$, $p<.008$) and MPSS scores ($r=-.447$, $p<.017$) of the partners. The partner's FAM3 scores was significantly correlated with his/her level of anxiety (HADS-Anxiety $r=.558$, $p<.002$) and depression scores (HADS-Depression $r=.844$, $p<.01$), with the TAS-20 ($r=.466$, $p<.012$), the MSPSS ($r=-.562$, $p<.002$) and the DAS scores ($r=-.451$, $p<.016$).

Discussion: Overall, data show that couples do not rate the quality of the FF equally but agree on the quality of the dyadic relationship. Interestingly, partners' psychological distress influenced both patients' and partners' perceptions of FF, suggesting that special attention should be paid to this aspect in clinical practice, as it could be a crucial factor for both partners.

Keywords: *Family functioning, dyadic relationship, multiple sclerosis, psychological distress, perceived social support.*

1. Introduction

Multiple sclerosis (MS) is a chronic, neurodegenerative, and disabling disease characterized by inflammatory processes. It primarily affects the central nervous system (CNS), resulting in a wide range of symptoms that vary in severity and progression, including motor deficits, sensory disturbances, and visual impairments. Beyond its physical manifestations, MS frequently presents significant cognitive impairments (Calabrese, 2006; Ehrensperger et al., 2008) and psychological distress, including anxiety and depression symptoms (Siegert et al., 2005). Indeed, the disease can profoundly impact the daily lives of people with

MS (PwMS), thus affecting both their social interactions and quality of life (Ehrensperger et al., 2008; Donisi et al., 2021).

MS is responsible of influencing family functioning (FF) and couple relationships. The main issue to consider when managing a chronic disorder - as MS is - goes beyond the individual, significantly impacting close relationships, particularly with partners (Uccelli, 2014). The emotional, physical, and financial strains imposed by the disease can disrupt couples' dynamics, leading to increased stress, conflict, and a perceived decline in relationship quality over time (Neate et al., 2019). Consequently, MS presents substantial challenges to dyadic relationships, as partners often play caregiving roles, thus altering the couple's balance (McCabe & McDonald, 2007). In addition, the absence of definitive cure for MS significantly contributes to the disease burden, that can present as unpredictable relapses, continuous progression, and prolonged morbidity, particularly in individuals with early-onset disease (Uccelli, 2014).

The quality of dyadic relationships between PwMS and their partners is influenced by several factors, including alexithymia, which represents the difficulty in identifying and expressing emotions (Chalah & Ayache, 2017). High levels of alexithymia have been linked with an impaired communication, resulting in decreased emotional bonding within interpersonal relationships. (Bird & Cook, 2013). Additionally, psychological distress, including anxiety and depression, can further strain relationships by reducing emotional availability and exacerbating interpersonal conflicts (Navaneetham & Kanth, 2022).

Another key determinant of dyadic relationship quality and FF is represented by the perceived social support, that acts as a protective factor against the psychological and emotional challenges associated with MS (Sherman et al., 2007). Adequate social support has been correlated with better emotional well-being, more effective coping strategies, and greater relationship satisfaction (Costa et al., 2012).

2. Objectives

Given the multidimensional impact of MS on individuals and their relationships, understanding the FF and the role played by psychological factors in families is essential. For this reason, the aim of this study was to investigate the FF of households with a parental couple member diagnosed with MS, and the quality of dyadic relationships in PwMS and their partners. Specifically, we aimed to investigate whether certain psychological variables such as psychological distress (anxiety and depression symptoms), perceived social support, and alexithymia were able to play a moderating or mediating role in the FF or dyadic relationship. By examining these interrelated factors, we sought to identify potential pathways for intervention that could enhance the well-being of both PwMS and their families. This approach underscores the importance of addressing not only the physical symptoms of MS but also its psychological and social ramifications to improve overall outcomes for affected individuals and their support networks.

3. Methods

Couples, each comprising a PwMS and their partner, were consecutively recruited from MS centers across Italy. During follow-up visits, a psychologist introduced the research objectives to the PwMS and asked for their participation, which involved completing an online survey.

Exclusion criteria for PwMS were: age below 18 years; an educational level of less than 5 years; insufficient proficiency in the Italian language, rendering them unable to complete the questionnaires; a current or past diagnosis of a neurological disorder other than MS or a psychiatric disorder; and severe motor or visual impairments that could interfere with psychometric assessments. Exclusion criteria for the partners of PwMS were: age below 18 years; an educational level of less than 5 years; insufficient proficiency in the Italian language; and a current or past diagnosis of a neurological or psychiatric disorder.

All participants were required to provide informed consent before being enrolled in the study, and then they completed a socio-demographic data sheet. Subsequently, participants were asked to complete a self-administered online survey designed to evaluate FF, the quality of the dyadic relationship, symptoms of anxiety and depression, perceived social support, and alexithymia.

Family functioning was evaluated using the Self-Rating Scale of the Short Form of the Family Assessment Measure, Third Edition (FAM3; Skinner et al., 2000), which allows individuals to evaluate their personal functioning within the family. Higher scores indicate above-average family difficulties, and this scale has demonstrated robust internal consistency, with Cronbach's alpha values ranging from 0.80 to 0.88 (Pellerone et al., 2017).

Dyadic relationship was evaluated using the Dyadic Adjustment Scale (DAS; Spanier, 1976;) that includes four subscales: Dyadic Satisfaction, Dyadic Cohesion, Dyadic Consensus, and Affectional Expression. The final score ranges from 0 to 151, with higher scores corresponding to greater dyadic consensus. The DAS has shown strong psychometric properties, including internal consistency with Cronbach's alpha values ranging from 0.70 to 0.95, as well as test-retest reliability (Carey et al., 1993).

Symptoms of anxiety and depression was evaluated using the Hospital Anxiety and Depression Scale (HADS), which comprises 14 items, divided into two subscales: the HADS-Anxiety (seven items) and the HADS-Depression (seven items) (Zigmond & Snaith, 1983). Each subscale score ranges from 0 to 21, with higher scores suggesting a higher level of anxiety or depressive symptoms. The HADS has demonstrated good psychometric properties, including concurrent validity, test-retest reliability, and internal consistency, with Cronbach's alpha values ranging from 0.82 to 0.90 (Bjelland et al., 2002).

Perceived social support was assessed using the Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet et al., 1988). The MSPSS included 12 items rated on a 7-point Likert scale, with higher scores corresponding to greater levels of perceived social support. The MSPSS has shown excellent psychometric properties, including high internal consistency (Cronbach's alpha: 0.87–0.94) and test-retest reliability (Osman et al., 2014).

Finally, alexithymia was evaluated using the Toronto Alexithymia Scale (TAS-20), a 20-items self-report measure that assess three dimensions: Difficulty Identifying Feelings, Difficulty Describing Feelings, and Externally Oriented Thinking (Taylor et al., 2003). A total score of more than 60 indicates the presence of alexithymic traits. The TAS-20 has demonstrated good internal consistency (Cronbach's alpha = 0.70) and test-retest reliability (Taylor et al., 2003).

4. Results

For this study, data from a sample of 28 couples, comprising 16 (57.1%) women and 12 (42.9%) men diagnosed with MS (mean (SD) age: 45.18 (8.7)) and their respective partners (mean (SD) age: 46.39 (8.9)) were analyzed. Most of the included people had a degree school level (PwMS: 26 (92.9%); Partners: 25 (89.3%)) and were employed (PwMS: 18 (64.3%); Partners: 19 (67.9%)) (see Table 1).

Table 1. Data regarding PwMS and related Partner.

| | | PwMS | Partner |
|-----------------------------|-------------------------|--------------|---------------|
| Employment (N(%)) | <i>Employed</i> | 18 (64.3%) | 19 (67.9%) |
| | <i>Unemployed</i> | 2 (7.1%) | 3 (10.7%) |
| | <i>Retired</i> | 3 (10.7%) | 2 (7.1%) |
| | <i>Housewife</i> | 5 (17.9%) | 4 (14.3%) |
| | <i>FAM3 (Mean (SD))</i> | 10.89 (5) | 11.14 (7) |
| <i>DAS (Mean (SD))</i> | | 108.25 (11) | 107.75 (11.6) |
| <i>HADS-Anx (Mean (SD))</i> | | 6.93 (4.4) | 7.14 (5.6) |
| <i>HADS-Dep (Mean (SD))</i> | | 6.21 (4.5) | 4.54 (4.1) |
| <i>MSPSS (Mean (SD))</i> | | 69.79 (10.7) | 69 (14.5) |
| <i>TAS-20 (Mean (SD))</i> | | 57.75 (12.5) | 56.82 (12.1) |

Note. PwMS: People with MS; FAM3: Brief Family Assessment Measure 3; DAS: Dyadic Adjustment Scale; HADS-Anx: Hospital Anxiety and Depression Scale – Anxiety; HADS-Dep: Hospital Anxiety and Depression Scale – Depression; MSPSS: Multidimensional Scale of Perceived Social Support; TAS-20: Toronto Alexithymia Scale – 20 items.

As shown in Table 1, PwMS and partners reported similar mean values in the FAM3, both falling in a range which suggested limited family difficulties. In addition, the DAS scores revealed an overall satisfaction of the quality of the dyadic relationship in both groups. Regarding psychological distress, 9 (32.1%) PwMS and 12 (42.9%) partners showed the presence of statistically significant levels of anxiety symptoms, while 9 (32.1%) PwMS and 7 (25%) partners showed the presence of statistically significant levels of depressive symptoms at the HADS. Finally, the TAS-20 showed that 13 (46.4%) PwMS and 9 (32.1%) partners had alexithymic trait.

Regarding the within-group correlations, FAM3 scores of PwMS correlated significantly with DAS ($p < .01$), MSPSS ($p < .01$) and TAS-20 scores ($p < .025$). There were no correlations between FAM3 and psychological distress. On the contrary, the partner's FAM3 scores correlated significantly with his/her level of anxiety (HADS-Anxiety: $p < .002$) and depression scores (HADS-Depression: $p < .01$), as well as with DAS ($p < .016$), MSPSS ($p < .002$), and TAS-20 ($p < .012$) scores (Table 2).

Table 2. Correlations between FAM3, DAS, HADS-Anxiety, HADS-Depression, MSPSS, and TAS-20.

| | PwMS | | | | | PARTNER | | | | |
|-----------------|---------|--------|--------------|--------------|-------|---------|---------|--------------|--------------|--------|
| | FAM3 | DAS | HADS -Anx | HADS -Dep | MSPSS | FAM3 | DAS | HADS -Anx | HADS -Dep | MSPSS |
| DAS | -.643** | | | | | -.451* | | | | |
| HADS-Anx | 0.276 | 0.003 | | | | .558** | -.433* | | | |
| HADS-Dep | 0.335 | -0.305 | .710** | | | .699** | -.545** | .844** | | |
| MSPSS | -.624** | .563** | -0.011 | -0.220 | | -.562** | 0.320 | -0.266 | -.384* | |
| TAS-20 | .424* | -0.245 | .575** | 0.303 | 0.015 | .466* | -.403* | .601** | .529** | -.464* |

Note. *p-value < .05; **p-value < .01. PwMS: People with MS; FAM3: Brief Family Assessment Measure 3; DAS: Dyadic Adjustment Scale; HADS-Anx: Hospital Anxiety and Depression Scale – Anxiety; HADS-Dep: Hospital Anxiety and Depression Scale – Depression; MSPSS: Multidimensional Scale of Perceived Social Support; TAS-20: Toronto Alexithymia Scale – 20 items.

The correlations between the groups are shown in Table 3. The data showed no correlation between the FAM3 scores of the PwMS and the partner, while there was a statistically significant correlation between the DAS scores ($r=.496$, $p<.007$). The FAM3 scores of the PwMS correlated with the HADS-Depression ($r=.493$, $p<.008$) and the MPSS scores ($r=-.447$, $p<.017$) of the partners, while the FAM3 of the partners showed no correlation with any of the variables assessed in the PwMS.

Table 3. Correlations between FAM3, DAS, HADS-Aanxiety, HADS-Depression, MSPSS, and TAS-20 scores of PwMS and related Partner.

| | Partner | | | | | |
|-----------------|---------|--------|----------|----------|--------|--------|
| | FAM3 | DAS | HADS-Anx | HADS-Dep | MSPSS | TAS-20 |
| FAM3 | 0.347 | -0.343 | 0.332 | .493** | -.447* | 0.244 |
| DAS | -0.366 | .496** | -0.363 | -.521** | 0.099 | -0.241 |
| HADS-Anx | -0.024 | 0.078 | -0.129 | -0.109 | -0.087 | 0.105 |
| HADS-Dep | -0.079 | -0.165 | -0.236 | -0.129 | -0.030 | -0.025 |
| MSPSS | -0.294 | .377* | -0.306 | -.536** | 0.189 | -.380* |
| TAS-20 | 0.173 | -0.069 | 0.134 | 0.142 | -0.232 | 0.154 |

Note. *p-value < .05; **p-value < .01. PwMS: People with MS; FAM3: Brief Family Assessment Measure 3; DAS: Dyadic Adjustment Scale; HADS-Anx: Hospital Anxiety and Depression Scale – Anxiety; HADS-Dep: Hospital Anxiety and Depression Scale – Depression; MSPSS: Multidimensional Scale of Perceived Social Support; TAS-20: Toronto Alexithymia Scale – 20 items.

5. Discussion and conclusions

The results of this preliminary study highlight the complex interaction between individual, dyadic and family dynamics in couples managing MS.

The significant correlations between FF (FAM3) and psychosocial variables, such as dyadic adjustment, perceived social support, and alexithymia in the PwMS group suggest a deeply interconnected system in which difficulties in one domain may exacerbate problems in other domains.

PwMS reported that poorer FF was associated with greater emotional dysregulation and with low levels of perceived social support and dyadic adjustment. Interestingly, there was no association between FF and psychological distress in PwMS.

In contrast, in the partners group, higher levels of anxiety and depression symptoms were strongly associated with poorer FF perceptions, which were also influenced by higher levels of alexithymia and low levels of perceived social support and dyadic adjustment.

The most interesting results probably concern the correlations between the groups and in particular the correlation between the partner's depressive symptoms and the FF perception of both the partner himself and the PwMS. Thus, the psychological distress of those who share daily life with the PwMS influences not only their own perception of FF, but also that of the person with MS themselves.

These findings suggest that a more comprehensive caretaking approach is needed, involving both patients and their partners. Adopting a more comprehensive perspective would allow for more useful and informed interventions in disease management.

The main limitation of this study is the small sample size, which makes it difficult to expand this aspect to the general population. For this reason, it is recommended that further studies are conducted to fill the gaps in the current literature.

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