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Relationship quality and balance of give-and-take in couples coping with Multiple Sclerosis

Abraham P. Buunk[1], Roeline G. Kuijer[2], Yvonne A. B. Buunk-Werkhoven[3], Jan-Fekke Ybema[4]

[1]University of Groningen, Grote Kruisstraat 2/1, 9712 TS, Groningen, The Netherlands.
[2]University of Canterbury, 20 Kirkwood Avenue, Upper Riccarton, Christchurch 8041, New Zealand,
[3]Kauno Kolegija, K. Petrausko g. 15, LT-44162, Kaunas, Lithuania.
[4]Utrecht University, Heidelberglaan 8, 3584 CS Utrecht, The Netherlands.

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Abstract: The present study examined relationship quality and the balance of give-and-take in couples facing Multiple Sclerosis (MS). Couples facing MS were as satisfied with their relationship as healthy couples were. In general. marital satisfaction was high and did not indicate marital instability. With respect to the balance of give-and-take, patients felt, as expected, overbenefited in their relationship, whereas only female partners felt underbenefited. Male partners felt equitably treated. Although both patients and partners experienced changes in the division of tasks as a result of the MS that were consistent with a patient-caregiver division of roles, both partners reported that the ill partner was providing as much support to the healthy partner as before the onset of MS. The associations between equity and changes in the division of tasks on the one hand and relationship quality on the other hand not only showed that perceived balance of give-and-take is important for relationship quality but also that not only receiving benefits but also providing benefits may be satisfying. Finally, patient's physical condition was found to be related to relationship characteristics concerning perceptions of give-and-take, whereas patient's psychological condition was particularly related to the broader evaluation of relationship quality.

Keywords: Multiple Sclerosis, Equity, Close Relationships

INTRODUCTION

Multiple Sclerosis (MS) is a progressive neurological disease that produces demyelination of the central nervous system nerve fibers, resulting in disordered transmission of nerve impulses. A wide and often confusing array of symptoms can be produced, including loss of function or feeling in limbs, spasticity, loss of bowel or bladder control, visual impairment, pain, fatigue, loss of cognitive functioning and emotional changes (e.g. Devins & Seland, 1987; Mohr & Dick, 1998; Perera Molligoda Arachchige *et al.*, 2025). MS is most commonly diagnosed in young adulthood, that is between ages 20 and 40, and is about 1,5 times more common in women than in men. The disease usually follows an unpredictable course over several decades, often with episodes of remissions and exacerbations, but typically results in a progressive decline in functioning (e.g. Antonak & Livneh, 1995; Haki *et al.*, 2024). There is increasing evidence for a relationship between MS and the Epstein-Barr virus (Klotz *et al.*, 2025), and there are important recent developments for monitoring and prognosis of MS, including new biomarkers, advanced imaging, and artificial intelligence. There are also promising new developments for treatment, including Bruton Tyrosine Kinase (BTK) inhibitors and CAR T-cell therapies (Klotz *et al.*, 2025; Msheik *et al.*, 2025).

The severity of the disease, the unpredictability of its course and its disabling nature make that patients with MS are at a high risk of developing a depression. An early meta-analysis showed that MS patients have higher rates of depression than either the general population or people with other medical or neurological diseases (Schubert & Foliart, 1993). Lifetime prevalence of a depression is estimated between 42 and 54% (see reviews by Rao *et al.*, 1992; Mohr & Dick, 1998). A recent study among MS patients showed that 30.1% had currently symptoms for depression and 11% presented suicidal thoughts (Văcăraş *et al.*, 2020). Sucicidal thoughts are mostly influenced by the disease, particularly the duration, the occurrence of relapses, and acquired disability, but also by depression and lack of education (Romanicu *et al.*, 2020). Among children and young adults, depression and fatigue are highly prevalent disturbances and may cause considerable functional impairment on daily activities and quality of life (Tarantino *et al.*, 2024). During the COVID-19 pandemic stage there was among MS patients a particular risk of experiencing depression, anxiety and fear of relapse, especially among those low in social support (Shaygannejad *et al.*, 2021). As there is still no curative therapy for MS and treatment is primarily aimed at the relief of symptoms (Rao *et al.*, 1992), and there is considerable evidence that group therapy may address anxiety and depression among MS patients (Steinberg *et al.*, 2023).

The quality of the marital relationship is a very important issue among MS patients. A study among MS patients showed that their marriages were less well-adjusted compared to marriages in the general population (Rodgers & Calder, 1990). However, patients with MS do not seem to differ in relationship satisfaction from patients with Huntington's Disease, Parkinson or Motor Neurone Disease (O'Connor *et al.*, 2008). In addition, the satisfaction of patients does not seem to differ from that of their partners. Marital satisfaction may function as a buffer between patients' anxiety and his or her quality of life. That is, the better the marital relationship, the less patients' anxiety resulted in a low quality of life (Santos *et al.*, 2019).

Nevertheless, MS may affect the marital relationship in a negative way. Healthy partners not only have to cope with their own sadness and distress about their partner's gradually worsening illness, but the responsibility of caregiving often falls to them as well (Mohr & Dick, 1998). Dupont (1996) found that between a quarter and a third of the couples had relationship satisfaction scores that indicated some dissatisfaction, but that extreme marital dissatisfaction was rare. In a similar vein, Woollett and Edelmann (1988) reported that the marital satisfaction of patients and partners in their sample did in general not indicate marital instability. However, partners tended to be more dissatisfied with the relationship than patients. A study in Mexico by Lehan *et al.* (2012) showed that the patient symptoms that were related to the highest level of distress for caregivers were depression, difficulty talking, difficulty hearing, becoming upset easily, and upsetting other people. Patient symptoms with the lowest average level of distress for caregivers included difficulty with learning, seizures, trouble when reading, difficulty with eating, and difficulty with writing. Forty percent of the caregivers met the criteria for a probable major depressive disorder. Thus, the overall picture suggests that marital dissatisfaction of partners indeed occurs, and that this may result in depression.

The present study had several goals. Since basic data on relationship satisfaction among couples facing MS are rare and somewhat contradictory, the first aim of the present study was to examine relationship satisfaction among both patients with MS and their partners. Second, and most central to the present research, it was examined how MS may affect the quality of the relationship through changes in the balance of give-and-take between patient and partner (Buunk *et al.*, 2012; Cutrona, 1996). From the perspective of classic equity theory (Walster *et al.*, 1978), a relationship is inequitable when the ratio between contributions and rewards of one partner deviates from the ratio of the other partner. Individuals receiving disproportionately few rewards are expected to feel underbenefited, and those receiving disproportionately many rewards are expected to feel overbenefited. Whereas help and support may have flowed back and forth between both partners before the onset of MS, the exchange may become more unidirectional afterwards. Healthy partners' contributions to the relationship increase; they may have to take on extra household chores, assist with patient's self-care and medical regimens, and provide emotional support, whereas patients' contributions may decrease due physical limitations and emotional problems (Benini *et al.*, 2023; Kleiboer *et al.*, 2006).). As a result, patients' rewards will increase, whereas the partners' rewards will decrease, that is, they may receive less support because the patient is very occupied with the illness, or they may be constrained in their social life and activities. Thus, we can expect that patients will feel overbenefited and their partners underbenefited. We further examined to what extent perceived inequity is related to relationship quality, and to what extent it depends on the physical and psychological condition of the patient. Equity theory predicts that people who feel inequitably treated in their relationship will become distressed and dissatisfied whether they feel underbenefited or overbenefited. Indeed, research among healthy couples in general shows that inequity is associated with lower relationship satisfaction (e.g. Buunk & VanYperen, 1991; Hatfield *et al.*, 1984). In the present study, couples facing MS were compared with a sample of healthy couples in order to compare the degree and nature of inequity as well as the level of relationship satisfaction. In addition, gender differences were examined. It was expected that male patients and partners would feel more overbenefited and less underbenefited, respectively, than their female counterparts. Research among healthy individuals generally shows that men feel more overbenefited in their relationship than women do (e.g. Buunk & VanYperen, 1991).

The few studies that have examined inequity in couples facing a serious illness, have provided somewhat inconsistent results. Kuijer *et al.*, (2001) found that cancer patients indeed felt on average overbenefited in their relationship. However, in another study, this was only found for male cancer patients, whereas female patients felt on average equitably treated (Kuijer, *et al.*, 2002). In both studies, the partners of these patients did not feel underbenefited. Similarly, Thompson *et al.* (1995) found that spouses of cardiac patients did in general not feel underbenefited in their relationship. MS differs from cancer and heart disease in two important aspects that may influence perceptions of give-and-take. First, MS generally develops at a younger age and as a result these couples may encounter other problems regarding give and take, for example, because their relationship has not stabilized yet, because they have children at home or because they are in an early part of career development. Second, MS is generally speaking a more chronic, progressive and disabling disease. As a result of these differences, it is possible that issues of give-and-take are more pronounced in couples facing MS.

There is more evidence that perceptions of inequity in the context of a serious illness are associated with distress, including a higher caregiver burden among partners of patients with cancer (Ybema *et al.*, 2002) and a higher caregiver burden among partners of cardiac patients (Thompson *et al.*, 1995). Moreover, research among cancer patients has shown that perceived inequity, especially underbenefit, was generally associated with lower relationship satisfaction, more negative affect and less positive affect associated with give-and-take in the relationship among both patients and their partners (Kuijer *et al.*, 2001; 2002). There is also some evidence that relationship satisfaction was especially low among cancer patients with a poor physical condition who felt underbenefited compared to those who felt overbenefited or equitably treated (Kuijer *et al.*, 2002). Partners of the patients who were in a good physical condition were less satisfied with their relationship when they felt underbenefited compared to those who felt overbenefited or equitably treated. Because physical impairment is such an important consequence of having MS it was also examined in the present research to what extent the patient's physical condition is related to both partners' perceptions of equity and relationship quality, and whether the patient's condition plays a moderating role in the association between equity and relationship quality.

In addition, the role of depressive symptoms in patients in affecting both partners' perceptions of equity and their relationship satisfaction were examined. The patient-caregiver division of roles assumes that as a result of the illness healthy partners will contribute more to the relationship in at least two domains, that is, providing social support and performing practical tasks (e.g. household chores), whereas patients are assumed to provide less support and perform fewer tasks. As far as we know, no previous research has examined perceived changes in the division of tasks in these two domains.

To summarize, we examined the following questions in the present study. Do MS patients and their partners differ in their relationship satisfaction? How does the relationship quality of couples facing MS compare to that of healthy couples? How do partners within couples facing MS perceive the balance of give-and-take – equity - their relationship? Do MS patients more often feel overbenefited and their partners more often underbenefited? How do such feelings affect relationship quality? How are the patients' physical and psychological conditions related to perceptions of give-and-take and to overall relationship quality?

MATERIALS AND METHODS

Participants

Couples facing MS were contacted through coordinators of regional departments of the Dutch Multiple Sclerosis Society or through an advertisement in the regional newsletters of two departments of this society. Of the 133 couples who responded to this initial request we received completed questionnaires from 88 couples (66%)[1]. Of the patients with MS, 34% ($N = 30$) were male and 66% ($N = 58$) were female, which approximates the distribution of MS in the community. Their mean age was 48 years (range: 28 to 74, $SD = 12$). The mean time since disease onset was 10 years earlier (range: 11 months to 34 years, $SD = 8.25$). About half of the patients (52%) described their MS as having a relapse remitting course, 30% as having a progressive course, and 18% as having some other course. Only 13% of the patients were employed (3% full-time and 10% part-time), the other patients received a disability benefit (44%), performed home duties (23%), were retired (9%) or were not employed for other reasons (11%).The partners of these patients were, on average 49 years (range: 26 to 78, $SD = 12.5$). Most partners were employed (42% full-time and 10% part-time), 22% performed home duties, 14% were retired, 7% received a disability benefit, and 5% were not employed for other reasons. The couples had been married (92%) or cohabiting (8%) for an average of 23 years (range: 11 months to 52 years, $SD = 11.5$).

In addition, a control group of healthy couples was recruited through a sample from a population register of a small village and a sample from a telephone book for a medium-sized town[2] (see for more details about this sample, Kuijer *et al.*, 2001a). Both partners in 80 couples returned their questionnaire. The average age of the men in the control group was 50 (range: 23 to 76, $SD = 14$); and that of the women was 47 (range: 22 to 74, $SD = 14$). Most of the couples were married (94%), the other couples were cohabiting or had a steady relationship but were living apart. The mean duration of these relationships was 25 years (range: 2 to 51, $SD = 14$).

The two samples in the present study were comparable with respect to relationship characteristics such as marital status, Chi^2 (1, $N = 168$) = .57, *ns*, relationship duration, $t(166) = -.80$, *ns*, and whether or not they had children, Chi^2 (1, $N = 168$) = 1.11, *ns*. In addition, the men and women in the two samples were similar in age, $t < .45$, *ns,* and level of education, $t < .1.10$, *ns*.

Measures for all participants

Because we wanted healthy couples to fill out the same questionnaire as the couples facing MS, we randomly gave one partner of the control group the ”patient” questionnaire and the other partner the “partner” questionnaire. Means, standard deviations, reliabilities and inter-correlations of all the key variables among couples facing MS are presented in Table 1. Means and reliabilities for the healthy couples will be discussed separately.

Equity

Perceived equity was measured with a question based on the Hatfield Global Measure (Hatfield *et al.*, 1984). The question was introduced in the following way: “The next questions are about the give-and-take that goes on in the relationship. We want you to judge the give-and-take, for instance doing things for each other, listening to each other and talking about each other’s problems, in your relationship”. Then it was asked: “When you look at your relationship from a viewpoint of give-and-take, how would you describe your relationship?”. Both partners had to make their estimates on a 5-point scale, varying from “My partner is doing a lot more for me than I am doing for him/her” (+2), through “ My partner is doing as much for me as I am doing for him/her” (0), to “My partner is doing a lot less for me than I am doing for him/her” (-2). Based on this linear term for over/underbenefit, a term for deviation from equity was constructed. The original scores representing underbenefit, -2 and –1, were recoded as +2 and +1. This way a 3-point scale was constructed, ranging from 0 (equity) to 2 (inequity).

Relationship satisfaction

Both partners filled out the marital satisfaction subscale of the Dutch translation of the Maudsley Marital Questionnaire (Arrindell *et al.*, 1983). This scale consists of 10 items, e.g. “Do you get enough warmth and understanding from your partner?” and “Is your partner attractive to you as a person?”. The items were measured on 9-point scales ranging from 0 to 8. Cronbach’s alpha in the healthy sample was .90 for those who filled out the patient questionnaire and .91 for those who filled out the partner questionnaire (see Table 1 for alpha’s in patients with MS and their partners).

Measures for patients with MS and their partners

Relationship changes

Patients with MS and their partners filled out a scale on relationship changes developed by Kuijer *et al.* (2001). Participants were asked to judge to what extent they felt their relationship had changed as a result of the illness. This scale consists of 5 items concerning positive changes and 5 items concerning negative changes. All items begin with: “As a result of my (partner’s) illness... “and continued with, for example “... our relationship has become closer” and “... a lot of tension arose in our relationship”. The items were measured on a 5-point scale (1 = this is not true, 5 = this is very strongly true). The negatively formulated items were recoded. This means that the higher the score on this scale, the more the relationship had improved. Kuijer *et al.* (2001) found satisfactory internal consistencies of this scale in a sample of patients with cancer and their partners.

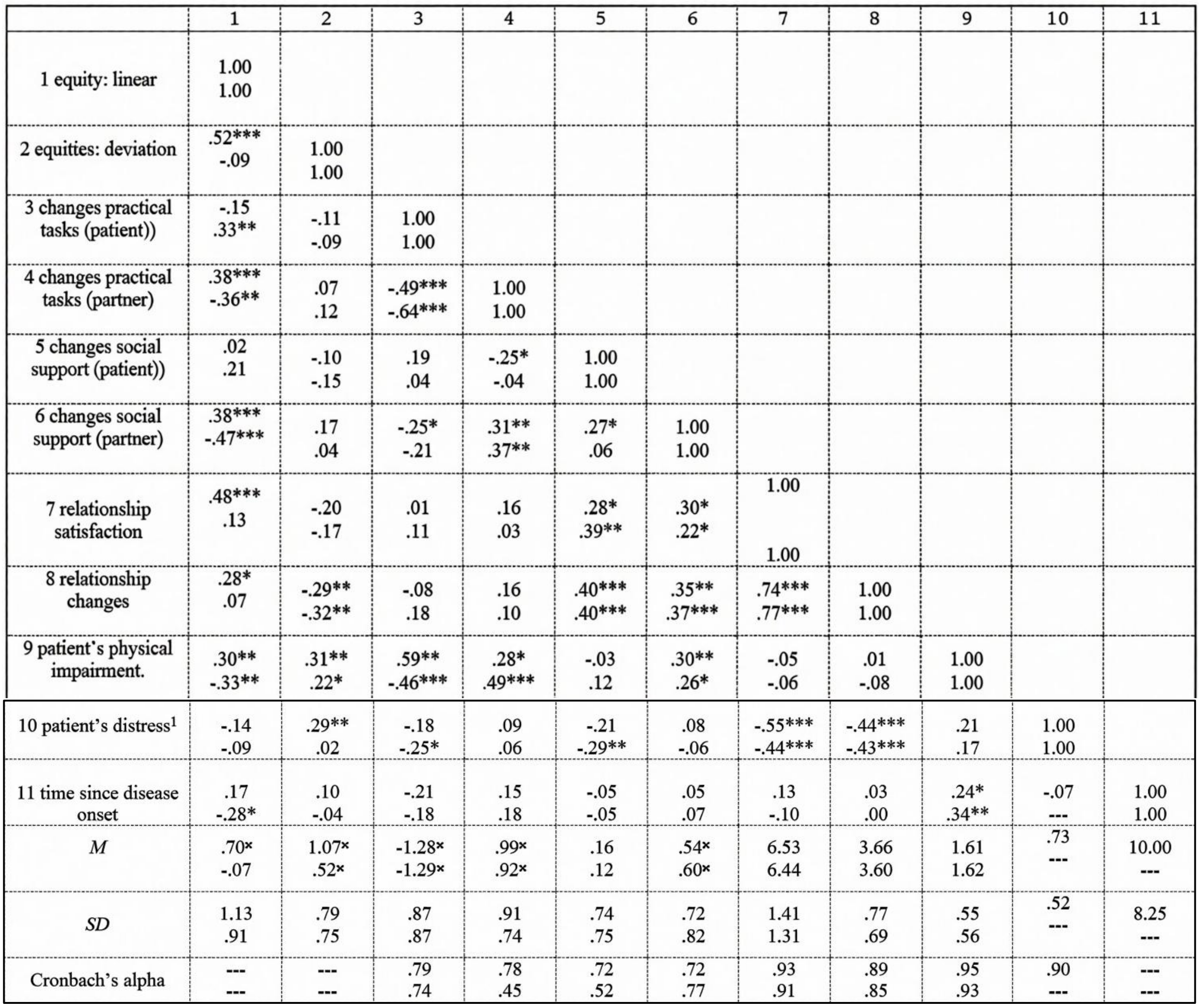
Perceived changes in division of tasks

Four questions were asked about the extent to which patients and partners felt that they were performing certain tasks or behaviors to a greater or lesser extent since the onset of their own MS or their partner’s MS. Two questions measured perceived changes in performing practical tasks (“performing household duties such as cooking, cleaning, doing the laundry” and “doing chores in and around the house such as gardening, and repairing things”) and two questions measured perceived changes in providing social support (“being supportive to your partner - comforting him/her, cheering him/her up” and “keeping your partner company”). The items were measured on a 5-point scale (-2 = I am doing this a lot less than before the onset of MS, 0 = I am doing this as much as before the onset of MS, +2 = I am doing this a lot more than before the onset of MS). The two questions for each domain were summed to form a scale.

In addition to judging their own activities, patients and partners were also asked to judge to what extent their partner was performing these four tasks or behaviors to a greater or lesser extent since the onset of the illness. The items were again measured on a 5-point scale (-2 = my partner is doing this a lot less than before the onset of MS, 0 = my partner is doing this as much as before the onset of MS, +2 = my partner is doing this a lot more than before the onset of MS) and the two items for each domain were summed to form a scale.

Thus, four subscales were constructed: changes in performing practical tasks by the patient, changes in performing practical tasks by the partner, changes in the provision of social support by the patient, and changes in the provision of social support by the partner (all as perceived by the patient as well as the partner). Table 1 shows that not all reliabilities were satisfactory, i.e., the reliabilities for the subscale ‘changes in performing practical tasks by the partner according to the partner him/herself’ and ‘changes in the provision of social support by the patient according to the partner’ were low. This may be attributable to having subscales of only two items (Nunnally, 1976).

Table 1: Correlations, Means, Standard Deviations, and Reliabilities for the Key Variables under Study among Couples facing MS.



	1	2	3	4	5	6	7	8	9	10	11
1 equity: linear	1.00 1.00										
2 equities: deviation	.52*** -.09	1.00 1.00									
3 changes practical tasks (patient))	-.15 .33**	-.11 -.09	1.00 1.00								
4 changes practical tasks (partner)	.38*** -.36**	.07 .12	-.49*** -.64***	1.00 1.00							
5 changes social support (patient))	.02 .21	-.10 -.15	.19 .04	-.25* -.04	1.00 1.00						
6 changes social support (partner)	.38*** -.47***	.17 .04	-.25* -.21	.31** .37**	.27* .06	1.00 1.00					
7 relationship satisfaction	.48*** .13	-.20 -.17	.01 .11	.16 .03	.28* .39**	.30* .22*	1.00 1.00				
8 relationship changes	.28* .07	-.29** -.32**	-.08 .18	.16 .10	.40*** .40***	.35** .37***	.74*** .77***	1.00 1.00			
9 patient's physical impairment.	.30** -.33**	.31** .22*	.59** -.46***	.28* .49***	-.03 .12	.30** .26*	-.05 -.06	.01 -.08	1.00 1.00		
10 patient's distress^1	-.14 -.09	.29** .02	-.18 -.25*	.09 .06	-.21 -.29**	.08 -.06	-.55*** -.44***	-.44*** -.43***	.21 .17	1.00 1.00	
11 time since disease onset	.17 -.28*	.10 -.04	-.21 -.18	.15 .18	-.05 -.05	.05 .07	.13 -.10	.03 .00	.24* .34**	-.07 ---	1.00 1.00
M	.70^x -.07	1.07^x .52^x	-1.28^x -1.29^x	.99^x .92^x	.16 .12	.54^x .60^x	6.53 6.44	3.66 3.60	1.61 1.62	.73 ---	10.00 ---
SD	1.13 .91	.79 .75	.87 .87	.91 .74	.74 .75	.72 .82	1.41 1.31	.77 .69	.55 .56	.52 ---	8.25 ---
Cronbach's alpha	--- ---	--- ---	.79 .74	.78 .45	.72 .52	.72 .77	.93 .91	.89 .85	.95 .93	.90 ---	--- ---

*Note: * p < .05, ** p < .01, *** p < .001. Correlations in the upper row concern patients, those in the lower row partners. 1Patients' distress is measured among patients only. Thus, correlations are between patient's distress (patient perception) and patient's (upper row) or partner's (lower row) perceived equity, relationship satisfaction, etc. Deviation from equity: the higher the score, the more inequity is perceived. Linear term for over/underbenefit: a positive score means a departure from equity (0) in the direction of overbenefit, a negative score in the direction of underbenfit. Perceived equity (linear and deviation term) and Changes in the division of tasks: x indicates a significant departure from equity.*

Patient's physical impairment

Both patients and partners filled out the Activities of Daily Living (ADL) subscale of the Groningen Activity Restriction Scale (GARS; Kempen *et al.*, 1996). Patients indicated to what extent they were able to perform 11 daily living activities such as dressing oneself, getting in and out of bed, getting around in the house (if necessary with a cane) and going up and down the stairs, independently. Items were measured on a 3-point scale (1 = fully independent, without any difficulty, 2 = fully independent, but with difficulty, 3 = not independent, only with help from someone else). Partners indicated to what extent they felt their ill partner was able to perform these 11 activities. The perceptions of patients and partners were highly correlated ($r = .89$, $p < .001$). In addition, Table 1 shows that patients and partners did not differ in their perceptions of patient's restriction in physical impairment, t (82) = -.37, *ns*. Apparently, partners were very accurate in estimating their ill partner's restrictions in physical impairment without minimizing or maximizing it.

Patient's psychological distress. The patient's level of distress was measured with the Center of Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). The CES-D consists of 20 items that measure depressive symptoms. The items were completed on a 4-point scale (0 = rarely or never, 3 = almost always). Examples are "Last week, I felt lonely" and “Last week, I felt afraid”. Thirty-six percent of the patients had a score at or above the cutoff score of .80 (or 16 in a summed scale), indicating that these patients were at risk for developing clinical depression.

Analyses

Analyses of variance, correlational and regression analyses were used to test the various hypotheses. Throughout the greater part of the result section, the analyses were limited to the sample of patients with MS and their partners. The healthy control group was included only when differences between couples facing MS and healthy couples were examined. Due to incidental missing values, the number of participants varied somewhat in the different analyses to maximize statistical power. In addition, in 5 cases the disease duration exceeded the couple’s relationship duration. These couples were omitted from all analyses concerning changes in the division of tasks and changes in relationship quality since disease onset.

RESULTS

Differences between patients with MS and their partners

Analyses of variance were conducted to examine differences within couples facing MS with respect to relationship satisfaction and relationship changes, perceived equity, and changes in the division of tasks. In addition, it was examined whether these differences within couples varied by the patient’s gender. This resulted in 2 (Role: patient vs. partner) X 2 (Patient’s gender: male vs. female) analyses of variance with Role as a within-couple factor and Patient’s gender as a between-couple factor and the two subscales for relationship quality, the linear term for overbenefit versus underbenefit, and the four subscales for changes in the division of tasks, respectively, as the dependent variables.

Relationship satisfaction and changes

In the analysis with both relationship satisfaction and perceived relationship changes as the dependent variables, no significant effects were found, $F(2,79) < 1.40$, *ns*. Patients were as satisfied with their relationship and perceived as many positive and negative changes in their relationship as did their partners (see Table 1). Note that patients and partners scored in general above the midpoint of the scale of perceived relationship changes (3) indicating that they perceived more positive than negative changes, i.e. patients and partners in general felt the relationship had improved.

Perceived equity

Next, an analysis of variance with the linear term for overbenefit versus underbenefit was conducted. As expected, a main effect for Role was found, $F(1,82) = 26.13$, $p < .001$, indicating that patients ($M = .70$) in general felt more overbenefited in their relationship than did their partners ($M = -.07$). Inspection of the means in Table 1 shows that, as predicted, patients felt significantly overbenefited (i.e. the mean differs significantly from 0, equity). Their partners, however, did not feel underbenefited. Instead, they felt on average equitably treated in their relationship. Furthermore, a significant Role x Patients gender interaction was found, $F(1,82) = 13.44$, $p < .001$, indicating that patient-partner differences in perceived equity varied with patient’s gender.

The means corresponding to this interaction are shown in Table 2 and suggest two things. First, post hoc analyses revealed that male patients felt on average more overbenefited than female patients, whereas female partners felt on average more underbenefited than male partners (see Table 2). In other words, in line with our hypothesis, it was found that male patients and partners felt on average more overbenefited or less underbenefited, respectively, than their female counterparts. Second, post hoc analyses showed that the difference in perceived equity within couples was only significant in couples with a male patient (see Table 2). Thus, male patients felt more overbenefited than their female partners, whereas female patients did not feel significantly more overbenefited than their male partners. Inspection of the means in Table 2 further shows that both male and female patients felt significantly overbenefited in their relationship, whereas female partners felt significantly underbenefited (i.e. the means differ significantly from 0, equity). Male partners felt on average equitably treated.

Table 2: Perceived Equity among Male and Female Patients and their Partners (Linear term for Over/underbenefit)

	Gender Patient	
	Male (N = 29)	Female (N = 55)
Patients	1.21_a^x	$.40_c^x$
Partners	$-.45_b^x$	$.13_{cd}$

Note: A positive score means a deviation from equity in the direction of overbenefit, a negative score in the direction of underbenefit. ^{x} *indicates a significant departure from 0 (equity) at least at p < .05. Means with different subscripts (letters a to d) in a row or column differ significantly from each other at p < .05 (Bonferoni-Holm inequality).*

Perceived changes in the division of tasks

Finally, in the analysis with the four subscales for changes in division of tasks as the dependent variables, no significant effects were found, $F(4,70) < 2.22$, *ns*. This indicates that patients and partners did not differ in their perceptions and that there were no gender differences. Examination of the means in Table 1 shows that, as expected, both patients and partners reported that the extent to which the patient performs practical tasks in and around the house significantly decreased since the onset of the illness (patient’s perception: $M = -1.28$;

partners' perception: *M* = -1.29), whereas the partner's share significantly increased (patient's perception: *M* = .99; partners' perception: *M* = .92). Moreover, both patients and partners reported that the patient was now providing as much social support to the partner as before the onset of the illness (patient's perception: *M* = .16; partner's perception: *M* = .12), whereas the partner was now providing significantly more social support to the patient than before the onset illness according to both patients (*M* = .54) and partners (*M* = .60).

Differences between couples facing MS and healthy couples

Analyses of variance were conducted to examine differences between couples facing MS and healthy couples with respect to relationship satisfaction and perceived equity. In these analyses, patients were compared to healthy participants who filled out the "patient" questionnaire (referred to as "patient" analysis) and partners were compared to participants who filled out the "partner" questionnaire (referred to as "partner" analysis). Gender differences were also examined. This resulted in 2 (health: MS vs. healthy controls) X 2 (gender) analyses of variance with both factors as between-respondent factors.

First, a patient and a partner analysis with relationship satisfaction as the dependent variable was conducted. No effects for health were found (patients and controls: *F*(1,163) = 2.71, *ns*; partners and controls: *F*(1,162) = 2.22, *ns*), indicating that patients (*M* = 6.53) and their partners (*M* = 6.53) were as satisfied with their relationship as were healthy participants (*M* patient questionnaire = 6.97; *M* partner questionnaire = 6.81). In the patient analysis, a gender effect was found, F(1,163) = 4.56, *p* < .05, showing that men (*M* = 7.03) were generally more satisfied with their relationship than were women (*M* = 6.55). No such effect was found in the partner analysis.

Next, a patient and a partner analysis with the linear term for overbenefit versus underbenefit as the dependent variable was conducted. In both analyses, a significant main effect for Health was found (patients and controls: *F*(1,162) = 11.16, *p* < .001; partners and controls: *F*(1,160) = 4.85, *p* < .05). In line with our expectations, patients (*M* = .70) felt more overbenefited in their relationship than did healthy participants (*M* who filled out patient questionnaire = .33). Also in line with our expectations, partners (*M* = -.07) felt more underbenefited than did healthy participants (*M* who filled out partner questionnaire = .13). In addition, a Gender effect was found in both analyses (patients and controls: *F*(1,162) = 15.43, *p* < .001; partners and controls: *F*(1, 160) = 9.39, *p* < .01), indicating that men experienced on average more overbenefit in their relationship than did women (patients and controls: *M* = .81 vs. 30); partners and controls: *M* = .18 vs. -.18).

Perceptions of inequity, relationship quality and patient's condition

Correlations between the key variables. Table 1 shows the zero-order correlations between all the key variables in the present study. Several correlations are noteworthy. To begin with, the pattern of relationships between patient's physical and psychological condition on the one hand and perceptions of perceived equity (including perceived changes in the division of tasks) and relationship quality on the other hand. Table 1 shows that the extent to which the patient was physically impaired was generally related to the variables concerning give-and-take. Compared to patients who were less impaired, patients who were more impaired felt more overbenefited and thus less equitably treated in their relationship, reported that they were performing practical tasks to a lesser extent, whereas they felt their partner was performing practical tasks to a greater extent and was providing social support to them in a greater extent since the onset of their MS. The correlations for partners were all in the same direction, with the obvious exception that partners felt less overbenefited in their relationship the more their ill partner was physically impaired. Among patients and partners, patients' physical impairment was not correlated with changes in social support by the patient. Moreover, the extent to which patients were physically impaired was not related to their own or their partner's evaluation of the relationship in general (relationship satisfaction and relationship changes).

For patients, the pattern of correlations was different, that is, patients' distress was especially related to the broader evaluation of the relationship. A higher level of patients' distress was associated with lower relationship satisfaction and less relationship improvement among both patients and partners. In addition, patients' distress was associated with more perceived inequity in any direction among patients. The more partners perceived a decrease in investments from the patient (both with respect to social support and carrying out practical tasks), the more psychological distress was reported by the patient.

In sum, patients' physical condition was especially related to relationship characteristics concerning perceptions of give-and-take. In contrast, patients' psychological condition was particularly related to the broader evaluation of the relationship (relationship satisfaction and relationship changes) and less consistently to perceptions of give-and-take. Additionally, as Table 1 shows, time since onset of the disease was unrelated to nearly all relationship characteristics.

Next, Table 1 shows that the linear term for equity (perceptions of overbenefit versus underbenefit) was associated with perceived changes in the division of tasks among both patients and partners. Patients felt more overbenefited in their relationship, the more they felt their partner had increased the provision of social support, and the more they felt their partner carried out practical tasks to a greater extent compared to before the onset of their MS. Partners felt more underbenefited in their relationship, the more they felt they had increased the provision of social support, the more they felt they carried out practical tasks to a greater extent, and the more they felt their ill partner decreased the extent to which he or she carried out practical tasks compared to before the onset of the MS.

Perceived equity, relationship quality and the moderating role of the patients' condition

The next research question concerned the association between perceived equity and perceived quality of the relationship. Moreover, it was examined if patients' condition (both physical and psychological) moderated this association. Hierarchical regression analyses were conducted separately for patients and their partners. To be able to find the hypothesized association that the equitably treated would report highest relationship quality and the underbenefited and overbenefited lower relationship quality, the linear term for overbenefit versus underbenefit as well as the term for deviation from equity were included in the analyses. Relationship satisfaction and relationship changes were regressed on patients' physical impairment and patients' distress (step 1), linear term for overbenefit versus underbenefit (step 2), deviation from equity (step 3), and the two-way interactions between the linear and the deviation term on the one hand and patients' psychical impairment and psychological distress on the other hand. The results from these analyses are presented in Table 3.

Table 3: Relationship Satisfaction and Relationship Changes regressed on Patients' Condition and Perceived Equity.

	Relationship Satisfaction				Relationship Changes			
	Patient		Partner		Patient		Partner	
	ß	$R^2\Delta$	ß	$R^2\Delta$	ß	$R^2\Delta$	ß	$R^2\Delta$
Patients' condition		.31***		.21***		.20***		.20***
- physical impairment.	-.07		.10		-.00		-.06	
1 - psychological distress	-.32***		-.46***		-.25*		-.45***	
2 Linear term for O/U (L)	.67***	.16***	.10	.01	.50***	.06*	.02	.00
3 Deviation from equity (D)	-.45***	.13***	-.19+	.04+	-.46***	.14***	-.33**	.11**
4 two-way interactions		.03		.03		.00		.02
- L x physical impairment.								
- D x physical impairment.								
- L x distress								
- D x distress								
Total R^2		.63***		.29**		.40***		.33***

Note: Regression coefficients of the equation regarding the first 3 steps of the analyses are shown. Missing values were deleted listwise per dependent variable. Patient's psychological distress is measured among patients only. + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Among both patients and their partners significant amounts of variance were explained in step 1. The beta weights in Table 3 show that, in line with the zero-order correlations, patients' distress was related to lower relationship satisfaction and to less positive relationship changes both as perceived by the patients themselves and as perceived by their partners, whereas patients' physical impairment was unrelated to these variables. Among patients, the linear term for overbenefit versus underbenefit, and the term for deviation from equity both explained unique variance in the successive steps in the regression analyses. Among partners, only the term for deviation from equity explained a significant (relationship changes) or a marginally significant amount of variance (relationship satisfaction, p = .056) in the regressions. The two-way interactions failed to explain unique variance in the final step of all four regression analyses, indicating that neither the patient's physical condition nor the patient's psychological condition moderated the association between perceived equity and relationship quality among couples facing MS. The regression slopes for relationship satisfaction and relationship changes were comparable for patients and partners. However, patients who felt underbenefited in their relationship experienced less improvement and reported less relationship satisfaction than patients who felt equitably treated or overbenefited. The pattern for their partners was different. They were sensitive to inequity in both directions, that is, partners who felt equitably treated in their relationship experienced more improvement and reported more relationship satisfaction than those who felt inequitably treated.

Additional contribution of changes in the division of tasks to relationship quality

Similar analyses as those described in the previous section were conducted to examine whether perceived changes in the division of tasks could explain unique variance in relationship quality over and above the variance already explained by perceived equity and patient's condition. Instead of the two-way interactions, the measures for perceived changes in the division of tasks were entered in the final step of the analyses. Perceived changes in the division of tasks contributed only marginally significantly in the final step of all analyses. Patients experienced more improvement in their relationship over and above the abstract evaluation of equity when they felt their partner was providing more social support to them compared to before the onset of the illness and they themselves felt they provided more social support to their partner. Moreover, patients felt somewhat (marginally significant) more satisfied with their relationship when they felt their partner was providing more social support to them compared to before the onset of their illness. Patients' partners reported more relationship satisfaction and improvement when they felt their ill partner was providing more support since the onset of the disease and they themselves provided more social support. In addition, they reported more improvement in their relationship, when their ill partner was performing more practical tasks and when they themselves performed more practical tasks.

DISCUSSION

This study showed a substantial number of findings on perceived relationship quality and the balance of give-and-take among couples facing multiple sclerosis (MS), and included a healthy control sample. The many findings will be discussed here briefly.

Relationship satisfaction

The results showed that MS patients or their partners did not have a relative low relationship quality. As in the study by Santos *et al.*, (2019), but contrary to Rodgers and Calder (1990), couples coping with MS were as satisfied with their relationships as healthy couples, and satisfaction levels (cf. Dupont, 1996; Woollett & Edelmann, 1988) indicated no marital instability (but see also Lehan *et al.*, 2012 for the factors causing distress among partners). Many couples even felt their relationship had improved since the onset of MS. Although earlier studies among healthy couples (Sprecher, 1999; Kuijer *et al.*, 2001) suggest that people generally perceive improvement over time, comparisons with healthy couples revealed similar levels of change. This suggests that reported improvement reflects a normal perception rather than a specific effect of illness. In general, the present findings indicate, in line with most earlier research that even a serious illness such as MS does not necessarily affect marital satisfaction negatively.

Equity and Gender Differences

In the Introduction, there were predicted differences in perceived equity, expecting patients to feel more overbenefited, and partners to feel more underbenefited (cf. Michaels *et al.*, 1984) . Supporting Kuijer *et al.* (2002), this was true mainly for couples where the patient was male. Both male and female patients, but especially male patients, felt more overbenefited than their partners, while female partners felt underbenefited and male partners felt equitably treated. Compared with healthy couples, MS relationships were less balanced: patients felt more overbenefited and partners more underbenefited than their healthy counterparts.

Gender differences echoed earlier findings (Kuijer *et al.*, 2001, 2002; Buunk & VanYperen, 1991). Men tended to feel more overbenefited or less underbenefited than women. Female partners' feelings of underbenefit aligns with the caregiver burden literature, including Miller and Cafasso's (1992) meta-analysis showing that female caregivers often experience greater burden than male caregivers.

Division of Tasks and Roles

Changes in task division reflected a patient-caregiver role pattern. Both partners agreed that since MS onset, healthy partners performed more practical tasks and provided more support, while patients did fewer. However, both patients and partners reported that patients continued to provide as much emotional support as before. This challenges the common assumption that the patient only receives support and suggests that patients remain meaningful sources of support—an under-recognized view in caregiving research.

No gender differences appeared in perceived task changes, though interpretations may vary. For women, doing more practical tasks may add to existing responsibilities, while for men, it may mean taking on duties previously unperformed. Thus, similar reported changes could still leave women with heavier workloads, consistent with Miller and Cafasso (1992).

Effects of Physical and Psychological Condition

Patients' physical condition related mainly to perceptions of give-and-take but not to overall satisfaction, echoing Rodgers and Calder (1990) and Woollett & Edelmann (1988). In contrast, psychological distress was strongly linked to both partners' evaluations of relationship quality. Dupont (1996) found emotional maladjustment negatively related to satisfaction in patients, though not in partners, whereas this study found effects for both. These results suggest that physical limitations may affect perceived equity, though depressive symptoms may have stronger emotional consequences for relationship satisfaction.

Equity and Relationship Quality

Consistent with equity theory and prior studies (Kuijer *et al.*, 2001; 2002), patients were most sensitive to underbenefit—reporting lower satisfaction when they felt they invested more than they received. They were less sensitive to overbenefit, consistent with findings among healthy couples (Hegtvedt, 1990; Michaels *et al.*, 1984). According to Hegtvedt (1990; Hegtvedt *et al.*, 1993), small overbenefits may be justified as fair and not cause distress. However, inequity in either direction was associated with greater psychological distress (Ybema *et al.*, 2001), suggesting that feeling overbenefited can still be emotionally burdensome. For partners, satisfaction and perceived improvement were highest when they felt equitably treated, confirming results from Kuijer *et al.* (2002) among couples facing cancer. Partners appeared more broadly sensitive to inequity regardless of whether they felt overbenefited or underbenefited.

Changes in the Task Division and Relationship Satisfaction

Perceived changes in task division also predicted relationship quality. Both patients and partners reported greater satisfaction and relationship improvement when they felt their partner provided more support—and, notably, when they themselves gave more support than before. Healthy partners also reported more improvement when both partners performed more practical tasks. These findings align with interdependence theory (Kelley, 1979), which posits that people benefit not only from receiving but also from giving support, as giving allows them to express care and commitment (Rusbult & VanLange, 1996). Caregiving studies have increasingly recognized such positive effects, including feelings of accomplishment (Ybema *et al.*, 2002).

Methodological Notes

A major strength of the study was the inclusion of both patients and partners, as well as a healthy control group. Most chronic illness studies focus on one partner, offering an incomplete picture. However, including both partners may introduce a selection bias, since distressed couples are less likely to participate. Recruiting through an MS association might also have led to a more illness-engaged sample. Because the design was cross-sectional, causality cannot be determined. Prior studies offer mixed evidence: VanYperen and Buunk (1990) found inequity affects satisfaction, while Grote and Clark (2001) proposed a reciprocal relationship between inequity and distress. It is also likely that MS itself prompts couples to reflect on give-and-take, independent of prior dissatisfaction.

CONCLUSION

Patients generally felt overbenefited, female partners underbenefited, and male partners equitably treated. Both partners experienced role changes consistent with caregiving patterns but reported maintaining mutual support. Relationship quality was closely tied to perceived equity and reciprocity. Counseling for MS couples should therefore address give-and-take—by promoting balance, revising expectations (Walster *et al.*, 1978), and emphasizing the emotional rewards of providing support. Finally, because depressive symptoms in patients affect both partners' relationship satisfaction, interventions should support the emotional well-being of both members of the couple.

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