# Assessment of the psychiatric symptoms and the adaptive functions in a sample of patients with multiple sclerosis

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**Background**
Psychiatric comorbidity has been and should continue to be a major concern in the treatment of chronic neurological disorders. The identification of patients at risk for developing psychiatric disorders is important for prophylaxis. The treatment of such complications depends on the differentiation of psychiatric syndromes on the basis of psychopathology and course and the identification of specific related factors such as the role of treatment, personal factors, and psychological stress factors.

**Aim**
To study the various psychological, psychosocial, and sociodemographic variables that may affect the development of psychiatric impairment in patients with multiple sclerosis.

**Methods**
In total, 90 successive patients with multiple sclerosis were interviewed on the experience of illness and were assessed using the Defense Style Questionnaire, symptom checklist (SCL), and Self-Efficacy Questionnaires.

**Results**
(a) Patients had interpersonal sensitivity, followed by obsession, depression, somatization, phobic anxiety, anxiety, paranoid ideation, hostility, and the least psychoticism on the symptom checklist, (b) patients scored the highest on pseudo altruism and the lowest on displacement in the Defense Style Questionnaire, and (c) women had significantly higher scores on some SCL90 subscales and on somatization, interpersonal sensitivity, depression, anxiety, hostility, and phobic anxiety subscales.

**Conclusion**
Patients with multiple sclerosis have to cope with a wide range of problems and develop coping defensive styles. Patients worried the most about low self-efficacy, especially those with an early age of onset. Patients who considered their illness as severe and who also had lowest self-efficacy scores had not only the worst pathology as evident from the highest SCL90 total, specifically depression and interpersonal sensitivity scores, but also the worst coping in terms of their defense style, as in autistic fantasy and passive aggression.

**Keywords:**
chronic illness, defense styles, multiple sclerosis, self-efficacy, symptom checklist SCL90

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## Introduction

Chronic neurological disorders such as multiple sclerosis are common. It affects 300 000 individuals in America, and the prevalence in Egypt, when last studied, was 109 000 (Lublin and Reingold, 1996; Poser and Brinar, 2004). The age of onset peaks between 20 and 30 years. Almost 70% of the patients manifest symptoms between the ages of 21 and 40 years. Similar to that seen in other immune mediated diseases, women are affected more frequently compared with men (1.4–3.1 times as many women as men are affected; Confavreux and Vukusic, 2006).

This illness alters behavior, resulting in remarkably diverse spectrum of clinical changes. The diversity reflects the anatomic foci, pattern of distribution, and biological and psychological differences among patients. Cognitive dysfunction in multiple sclerosis is well established; in contrast, behavioral changes are more difficult to define, quantify, and study (Mendez, 2000).

Psychiatric comorbidity has been and should continue to be a major concern in the treatment of chronic neurological disorders (Coustans *et al.*, 2004). The identification of patients at risk for developing psychiatric disorders is important for prophylaxis. The treatment of such complications depends on the differentiation of psychiatric syndromes on the basis of psychopathology and course and the identification of specific related factors such as the role of treatment, personal factors, and

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psychological stress factors (Amato and Ponziani, 2000). There are some important implications for the management of these patients. They include the prescription of antidepressants, the use of psychotherapy techniques, and arrangement of sessions with self-help groups.

## Aim

The aim of this work was to study the various psychological, psychosocial, and sociodemographic variables that may affect the development of psychiatric impairments in patients with multiple sclerosis, to define the patient groups susceptible to such impairments, and to explore their defense style as an adaptive mechanism to the stress caused by the disease.

## Method

The study sample comprised 90 consecutive patients with multiple sclerosis disorder who were recruited from the Neurology Outpatient Clinic of Kasr El Ani University Hospital. The study was designed as an outpatient cross-sectional study and received approval from the Ethical Research Committee. It conformed to the provisions of the World Medical Association's Declaration of Helsinki.

### Inclusion criteria

(1) Adult patients ranging in age from 18 to 45 years who had a history of multiple sclerosis for at least 3 years and had been on medication for at least 1 year.
(2) Diagnosis of the relapsing remitting-type of multiple sclerosis.

### Exclusion criteria

(1) The presence of any neurological disorder other than multiple sclerosis.
(2) Diagnosis of a progressive nonremitting-type of multiple sclerosis.
(3) Patient is exacerbated or on corticosteroid or interferon treatment during the study period.
(4) Mental retardation or any cognitive disorder.
(5) No comorbid medical disorder.
(6) Patient is uncooperative or refuses to continue with the study.

### Measures

A 'neuro psychiatric sheet' was used, which included the following:

(1) Personal history (age, name, work, education, social status)
(2) Registrar General's classification (Reid, 1989, classified work; professional, intermediate, skilled nonmanual, semi-skilled manual, unskilled manual).
(3) Social standard assessed by Fahmy and El Sherbini (1983): the parameters used were education, work, income of family, crowding index, and home sanitation in general, and the rating was according to the total score (high, middle, low, and very low).
(4) Psychiatric and family histories.
(5) The patient's subjective perception of the disease, fear of relapses, and fear of stigma.

### The symptom checklist

The Arabic version of symptom checklist-90 (SCL90; El Behairi, 1984) was used. It measures nine psychological symptoms on a five-point Likert scale, namely, somatization, obsession, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. It yields nine subscores and the total score of psychological distress.

### The Defense Style Questionnaire 40

The Arabic version of DSQ (Soliman, 1996, 1997) was used for an assessment of ego defenses. DSQ 40 (Andrews *et al.*, 1993) can yield 20 individual scores and three higher order scores of mature, immature, and neurotic factors.

### The Self-Efficacy Questionnaire

The Self-Efficacy Questionnaire (Tredman *et al.*, 1995) is a scale based on underlying core beliefs generated by the experience of illness and how effective an individual perceives himself/herself to be in handling everyday problems of life. It is composed of 12 statements that measure self-efficacy on a five-point Likert scale.

## Results

The sample comprised 90 adults with a diagnosis of multiple sclerosis. There were 48 (53.3%) men and 42 (46.7%) women. The mean age of the patients was 28.3 years (SD: ± 7.1 years). The mean age of the women was 30 ± 7.9 years, which is statistically significantly higher than that of men (26.8 ± 5.9 years, $t = 2.231$, $P = 0.028$).

Table 1 shows some sociodemographic characteristics of the sample. Of the patients, 40% were married, 52.2%

**Table 1 Sociodemographic characteristics**

| | *N* (%) |
|---|---|
| Social score level | |
| High | 3 (3.3) |
| Middle | 8 (8.9) |
| Low | 10 (11.1) |
| Very low | 69 (76.7) |
| Marital status | |
| Single | 47 (52.2) |
| Married | 36 (40) |
| Divorced | 5 (5.6) |
| Widow | 2 (2.2) |
| Work | |
| Working | 48 (53.3) |
| Not working | 42 (46.7) |
| Education | |
| Illiterate | 17 (18.9) |
| Primary education | 25 (27.7) |
| Secondary education | 40 (44.4) |
| High education | 8 (8.9) |

were single, 5.6% were divorced, and 2.2% were widowed. Only 18.9% of the patients were illiterate. Of the patients 46% were unemployed, of which 88.1% were women.

Only nine patients (10%) reported a past history of psychiatric disorder. Five patients (5.6%) reported that they had attempted suicide (Table 2).

Of the patients, 40 had a positive family history of psychiatric disorder (44.4%) (Table 3).

Table 4 shows the mean scores on the total and the subscales of SCL90 in descending order. Patients scored the highest on the interpersonal sensitivity scale – that is, they showed maximum interpersonal sensitivity – followed by obsession, depression, somatization, phobic anxiety, anxiety, paranoid ideation, and hostility, and scored the least on psychoticism.

Patients scored the highest on pseudo altruism and the lowest on displacement (Table 5).

Table 6 shows that patients mostly used neurotic defenses (mean = 12.24), followed by mature defenses and immature defenses.

The mean Self-Efficacy Questionnaire score was 0.675 (Table 7).

**Table 2 Past history of psychiatric disorder**

| Past psychiatric history | *N* (%) |
|---|---|
| Major depressive disorder | 1 (1.1) |
| Depressive disorder NOS | 1 (1.1) |
| Anxiety disorder | 2 (2.2) |
| Suicide | 5 (5.6) |
| No history | 81 (90) |
| Total | 90 (100) |

NOS, not otherwise specified.

**Table 3 Family history of psychiatric disorder**

| Family psychiatric history | *N* (%) |
|---|---|
| Present | 40 (44.4) |
| Not present | 50 (55.6) |
| Total | 90 (100) |

**Table 4 Mean scores of patients on the Symptom checklist-90 scale**

| SCL90 scale | Mean | SD |
|---|---|---|
| Interpersonal sensitivity mean | 1.72 | 0.92 |
| Obsessive compulsive mean | 1.59 | 0.78 |
| Depression mean | 1.57 | 0.83 |
| Somatization mean | 1.31 | 0.77 |
| Phobic anxiety mean | 1.26 | 0.91 |
| Anxiety mean | 1.21 | 0.71 |
| Paranoid ideation | 1.15 | 0.80 |
| Hostility mean | 1.14 | 0.74 |
| Psychoticism mean | 0.75 | 0.57 |
| Total | 11.70 | 5.69 |

SCL90, symptom checklist-90.

**Table 5 Mean Scores of Patients on the Defense Style Questionnaire 40**

| DSQ 40 defenses | Mean | SD |
|---|---|---|
| Pseudo altruism | 14.29 | 4.01 |
| Acting out | 13.20 | 4.92 |
| Reaction formation | 12.53 | 4.64 |
| Anticipation | 12.51 | 4.65 |
| Rationalization | 12.44 | 4.43 |
| Devaluation | 11.97 | 4.48 |
| Suppression | 11.69 | 4.68 |
| Undoing | 11.56 | 5.14 |
| Autistic fantasy | 10.93 | 5.71 |
| Sublimation | 10.64 | 4.09 |
| Idealization | 10.57 | 5.52 |
| Passive aggression | 10.42 | 5.07 |
| Somatization | 10.38 | 5.73 |
| Denial | 9.87 | 4.24 |
| Isolation | 9.00 | 5.02 |
| Splitting | 8.91 | 5.05 |
| Projection | 8.89 | 4.46 |
| Humor | 8.82 | 5.21 |
| Dissociation | 8.09 | 5.03 |
| Displacement | 6.00 | 3.84 |

DSQ 40, Defense Style Questionnaire 40.

**Table 6 Mean scores of patients on the Defense Style Questionnaire 40 defense groups**

| Group | Mean | SD |
|---|---|---|
| Neurotic defenses | 12.24 | 2.83 |
| Mature defenses | 10.92 | 3.06 |
| Immature defenses | 10.01 | 2.32 |

**Table 7 Mean scores of patients on the Self-Efficacy Questionnaire**

| | Mean | SD |
|---|---|---|
| Self-Efficacy Questionnaire | 0.6751 | 0.1652 |

Table 8 shows a statistically significant difference in the mean score of the Self-Efficacy Questionnaire between patients on a single drug and patients on polydrug therapy. Patients on polydrug therapy had a lower self-efficacy mean score ($P = 0.017$), indicating that they had less belief in their capabilities.

Table 9 shows a statistically significant difference in the mean score of the Self-Efficacy Questionnaire between married and unmarried patients. Married patients had a higher self-efficacy mean score ($P = 0.002$); that is, they had more belief in their self-efficacy. There was statistically significant difference in the total mean score of the SCL90 between men and women. The women scored significantly higher ($P = 0.002$). There was a statistically significant difference in the mean score of DSQ 40 mature defenses between married and unmarried patients (0.029).

Table 10 shows that women had significantly higher scores on some SCL90 subscales and higher scores on somatization (0.000), interpersonal sensitivity ($P = 0.010$), depression ($P = 0.000$), anxiety ($P = 0.001$), hostility (0.006), and phobic anxiety ($P = 0.008$) subscales. Marital status did not affect the type of symptoms experienced.

**Table 8 Impact of the number of drugs on self-efficacy, psychiatric symptoms, and defense styles**

| | SEQ | SCL90 total | DSQ 40 Mature | DSQ 40 Neurotic | DSQ 40 Immature |
|---|---|---|---|---|---|
| Single drug | 0.7203 | 110.88 | 42.68 | 48.44 | 118.39 |
| Polydrug | 0.6373 | 108.80 | 44.49 | 49.37 | 121.55 |
| *T* | 2.44 | 0.864 | −0.694 | −0.386 | −0.535 |
| *P* | 0.017* | 0.390 | 0.489 | 0.700 | 0.594 |

DSQ 40, Defense Style Questionnaire 40; SCL90, symptom checklist-90; SEQ, Self-Efficacy Questionnaire.
*Statistical significant.

**Table 9 Impact of sex and marital status on self-efficacy, severity of psychiatric symptoms, and defense styles**

| | SEQ | SCL90 total | DSQ 40 mature def. | DSQ 40 neurotic def. | DSQ 40 immature def. |
|---|---|---|---|---|---|
| Sex | | | | | |
| Females (42) | 0.6867 | 127.55 | 43.57 | 50.40 | 124.43 |
| Males (48) | 0.6650 | 94.17 | 43.75 | 47.67 | 116.33 |
| *T* | 0.618 | 3.147 | −0.069 | 1.149 | 1.385 |
| *P* | 0.538 | 0.002** | 0.945 | 0.254 | 0.170 |
| Marital status | | | | | |
| Not married | 0.6316 | 109.24 | 45.96 | 48.91 | 121.22 |
| Married | 0.7405 | 110.50 | 40.22 | 49.00 | 118.44 |
| *T* | −3.223 | −0.111 | 2.225 | −0.038 | 0.462 |
| *P* | 0.002** | 0.912 | 0.029* | 0.970 | 0.645 |

def., defences; DSQ 40, Defense Style Questionnaire 40; SCL90, symptom checklist-90; SEQ, Self-Efficacy Questionnaire.
*Statistical significant.
**High statistical significance.

**Table 10 Impact of sex and marital status on the mean scores of the symptom checklist-90 subscale**

| | Somatization | Obsession | Interpersonal sensitivity | Depression | Anxiety | Hostility | Phobic anxiety | Paranoid ideation | Psychoticism |
|---|---|---|---|---|---|---|---|---|---|
| Sex | | | | | | | | | |
| Female | 19.48 | 16.43 | 17.86 | 24.60 | 14.62 | 8.21 | 10.67 | 7.64 | 8.05 |
| Male | 12.65 | 15.42 | 13.42 | 16.81 | 9.81 | 5.67 | 7.15 | 6.21 | 7.040000 |
| *T* | 3.739 | 0.613 | 2.635 | 3.664 | 3.401 | 2.810 | 2.707 | 1.418 | 0.836 |
| *P* | 0.000** | 0.541 | 0.010* | 0.000** | 0.001** | 0.006** | 0.008** | 0.160 | 0.405 |
| Marital status | | | | | | | | | |
| Not married | 14.94 | 16.04 | 16.28 | 19.81 | 11.27 | 6.72 | 9.13 | 7.04 | 7.56 |
| Married | 17.17 | 15.67 | 14.31 | 21.39 | 12.56 | 7.06 | 8.28 | 6.64 | 7.44 |
| *T* | −1.117 | 0.220 | 1.114 | −0.680 | −0.545 | −0.346 | 0.619 | 0.382 | 0.090 |
| *P* | 0.267 | 0.826 | 0.268 | 0.498 | 0.587 | 0.730 | 0.537 | 0.703 | 0.928 |

*Statistical significant.
**High statistical significance.

**Table 11 Impact of work on self-efficacy, psychiatric symptoms, and defense styles**

| Work | SEQ | SCL90 total score | DSQ 40 mature defenses | DSQ 40 neurotic defenses | DSQ 40 immature defenses |
|---|---|---|---|---|---|
| Working (*N*=48) | 0.6804 | 96.52 | 44.08 | 48.38 | 117.29 |
| Not working (*N*=42) | 0.6692 | 124.86 | 43.19 | 49.60 | 123.33 |
| *T* | 0.318 | −2.630 | 0.343 | −0.509 | −1.028 |
| *P* | 0.751 | 0.010* | 0.731 | 0.612 | 0.307 |

DSQ 40, Defense Style Questionnaire 40; SCL90, symptom checklist-90; SEQ, Self-Efficacy Questionnaire.
*Statistical significant.

**Table 12 Impact of stigma fear on the self-efficacy, severity of psychiatric symptoms, and defense styles**

| Fear of stigma | SEQ | SCL90 | DSQ 40 mature defenses | DSQ 40 neurotic defenses | DSQ 40 immature defenses |
|---|---|---|---|---|---|
| Present (*N*=44) | 0.6237 | 124.09 | 42.86 | 48.34 | 124.73 |
| Absent (*N*=46) | 0.7244 | 96.02 | 44.43 | 49.52 | 115.70 |
| *T* | 3.020 | −2.609 | 0.606 | 493 | −1.552 |
| *P* | 0.003** | 0.011* | 0.546 | 0.623 | 0.124 |

DSQ 40, Defense Style Questionnaire 40; SCL90, symptom checklist-90; SEQ, Self-Efficacy Questionnaire.
*Statistical significant.
**High statistical significance.

Table 11 shows a statistically significant difference in the total mean score of SCL90 between working and nonworking patients. Working patients had a significantly lower total symptom score ($P = 0.010$).

Table 12 shows that patients with a fear of stigma had a significantly lower self-efficacy mean score ($P = 0.003$) than patients without a fear of stigma. Patients with a fear of stigma had a significantly higher mean SCL90 total score ($P = 0.011$) than patients without a fear of stigma.

Table 13 shows that patients with a fear of stigma used autistic fantasy significantly more ($P = 0.013$) and idealization significantly less ($P = 0.032$) than patients without a fear of stigma.

Table 14 shows that patients with a fear of stigma had a significantly higher mean score on the interpersonal sensitivity ($P = 0.000$), depression ($P = 0.013$), phobic anxiety ($P = 0.002$), and psychoticism ($P = 0.024$) subscales than patients without a fear of stigma.

Patients with a fear of stigma were significantly younger ($P = 0.031$) than patients without a fear of stigma (Table 15).

**Table 13 Difference in the mean scores of the Defense Style Questionnaire 40 defense mechanisms in relation to fear of stigma**

| | Fear of stigma | | | |
|---|---|---|---|---|
| DSQ 40 defenses | Present | Absent | *T* | *P* |
| Anticipation | 11.82 | 13.17 | −1.390 | 0.168 |
| Humor | 8.77 | 8.87 | −0.088 | 0.930 |
| Suppression | 11.59 | 11.78 | −0.193 | 0.847 |
| Sublimation | 10.68 | 10.61 | 0.084 | 0.933 |
| Pseudo altruism | 14.18 | 14.39 | −0.247 | 0.806 |
| Idealization | 9.30 | 11.78 | −2.181 | 0.032* |
| Reaction formation | 12.73 | 12.35 | 0.386 | 0.701 |
| Undoing | 12.14 | 11.00 | 1.049 | 0.297 |
| Acting out | 13.68 | 12.74 | 0.907 | 0.367 |
| Denial | 9.45 | 10.26 | −0.901 | 0.370 |
| Devaluation | 12.41 | 11.57 | 0.892 | 0.375 |
| Displacement | 6.23 | 5.78 | 0.547 | 0.586 |
| Dissociation | 7.64 | 8.52 | −0.833 | 0.407 |
| Autistic fantasy | 12.45 | 9.48 | 2.545 | 0.013* |
| Isolation | 9.45 | 8.57 | 0.839 | 0.404 |
| Passive aggression | 10.82 | 10.04 | 0.722 | 0.472 |
| Projection | 9.55 | 8.26 | 1.373 | 0.173 |
| Rationalization | 12.23 | 12.65 | −0.452 | 0.652 |
| Somatization | 11.27 | 9.52 | 1.459 | 0.148 |
| Splitting | 9.55 | 8.30 | 1.167 | 0.246 |

DSQ 40, Defense Style Questionnaire 40.
*Statistical significant.

Table 16 shows that patients who perceived the disease as curable scored significantly higher on the pseudo altruism defense than patients who perceived the disease as severe ($P = 0.012$).

**Table 15 Age in relation to fear of stigma**

| | Age | |
|---|---|---|
| Fear of stigma | Mean | SD |
| Present ($N=44$) | 26.64 | 6.34 |
| Absent ($N=46$) | 29.85 | 7.50 |
| *T* | 2.190 | |
| *P* | 0.031* | |

*Statistical significant.

**Table 16 Differences in the mean scores of the individual defense mechanisms between patients with different perceptions of the disease**

| DSQ 40 defenses | Curable | Serious | *T* | *P* |
|---|---|---|---|---|
| Anticipation | 12.89 | 12.18 | 0.507 | 0.614 |
| Humor | 8.67 | 9.45 | −0.468 | 0.642 |
| Suppression | 11.56 | 9.45 | 1.343 | 0.185 |
| Sublimation | 10.31 | 12.00 | −1.107 | 0.273 |
| Pseudo altruism | 15.11 | 11.64 | 2.590 | 0.012* |
| Idealization | 11.44 | 10.91 | 0.275 | 0.785 |
| Reaction formation | 11.51 | 13.45 | −1.175 | 0.245 |
| Undoing | 11.96 | 9.45 | 1.389 | 0.171 |
| Acting out | 12.62 | 15.45 | −1.627 | 0.110 |
| Denial | 9.87 | 9.27 | 0.379 | 0.706 |
| Devaluation | 11.47 | 12.73 | −0.810 | 0.422 |
| Displacement | 5.51 | 5.45 | 0.047 | 0.962 |
| Dissociation | 8.18 | 7.45 | 0.422 | 0.674 |
| Autistic fantasy | 10.49 | 15.27 | −2.782 | 0.007** |
| Isolation | 8.58 | 9.09 | −0.302 | 0.764 |
| Passive aggression | 9.64 | 13.45 | −2.520 | 0.015* |
| Projection | 8.22 | 9.09 | −0.592 | 0.556 |
| Rationalization | 12.44 | 12.00 | 0.286 | 0.776 |
| Somatization | 9.73 | 12.00 | −1.192 | 0.238 |
| Splitting | 8.71 | 8.91 | −0.110 | 0.913 |

DSQ 40, Defense Style Questionnaire 40.
*Statistical significant.
**High statistical significance.

**Table 17 Correlation of the symptom checklist and the psychiatric scales**

| SCL90 | *R* | *P* |
|---|---|---|
| Self-efficacy questionnaire | −0.435 | 0.000** |
| Immature defenses | 0.643 | 0.000** |
| Neurotic defenses | 0.393 | 0.000** |
| Mature defenses | 0.319 | 0.002** |

SCL90, symptom checklist-90.
**High statistical significance.

**Table 14 Impact of stigma fear on the mean score of the symptom checklist-90 subscales**

| Fear of stigma | Somatization | Obsession | Interpersonal sensitivity | Depression | Anxiety | Hostility | Phobic anxiety | Paranoid ideation | Psychoticism |
|---|---|---|---|---|---|---|---|---|---|
| Present ($N=44$) | 16.98 | 17.00 | 18.68 | 23.30 | 13.16 | 7.45 | 10.91 | 7.73 | 8.89 |
| Absent ($N=46$) | 14.74 | 14.83 | 12.43 | 17.72 | 11.00 | 6.28 | 6.76 | 6.07 | 6.20 |
| *T* | −1.149 | −1.330 | −3.868 | −2.539 | −1.456 | −1.252 | −3.249 | −1.653 | −2.299 |
| *P* | 0.254 | 0.187 | 0.000** | 0.013* | 0.149 | 0.214 | 0.002** | 0.102 | 0.024* |

*Statistical significant.
**High statistical significance.

**Table 18 Stepwise regression analysis of different variables in relation to self-efficacy**

| Dependant variables | Independent variables | *B* | *β* | *T* | *P* |
|---|---|---|---|---|---|
| | SCL90 total | −0.001 | −0.445 | −5.197 | 0.000** |
| | Age | 0.005 | 0.227 | 2.361 | 0.021* |
| | Drug treatment | −0.066 | −0.200 | −2.296 | 0.024* |
| | Marital status | 0.065 | 0.194 | 2.000 | 0.049* |
| | | | $R^2=0.378$ | | |
| | | | $F=12.916$ | | |
| | | | $P$ (sig. $F$) = 0.000** | | |

sig., significant; SCL90, symptom checklist-90.
*Statistical significant.
**High statistical significance.

**Table 19 Stepwise regression analysis of different variables in relation to defense styles**

| Dependent variables | Independent variable | *B* | *β* | *T* | *P* |
|---|---|---|---|---|---|
| DSQ40 Immature defenses | SCL90 total | 0.024 | 0.536 | 4.721 | 0.000** |
| $R^2$ | | | 0.491 | | |
| $F$ | | | 25.065 | | |
| $P$ (sig. $F$) | | | 0.000** | | |
| DSQ40 Neurotic defenses | SCL90 total | 0.030 | 0.580 | 5.196 | 0.000** |
| | Serious perception illness | −2.346 | −0.281 | −2.521 | 0.015* |
| $R^2$ | | | 0.367 | | |
| $F$ | | | 15.046 | | |
| $P$ (sig. $F$) | | | 0.000** | | |
| DSQ 40 mature defenses | SCL90 total | 0.023 | 0.395 | 3.131 | 0.003** |
| $R^2$ | | | 0.156 | | |
| $F$ | | | 9.802 | | |
| $P$ (sig. F) | | | 0.003 | | |

DSQ 40, Defense Style Questionnaire 40; SCL90, symptom checklist-90; sig., significant.
*Statistical significant.
**High statistical significance.

Patients who perceived the disease as severe and incurable scored significantly higher on the autistic fantasy and the passive aggression defense than patients who perceived it as curable ($P = 0.007$ and $P = 0.015$, respectively.

The SCL score correlated negatively with the SEQ and positively with the DSQ defense styles; that is, the more the symptoms, the less the belief in self-capabilities and self-efficacy, and the more the use of all groups of defenses (Table 17).

Table 18 shows the results of the stepwise regression analysis model to predict the self-efficacy questionnaire score. The total significance of the equation is $P$ equal to 0.000.

Variables in the equation are SCL90 total ($P = 0.000$), age ($P = 0.021$), drug treatment ($P = 0.024$), and marital status ($P = 0.049$).

Table 19 shows the results of the stepwise regression analysis model to predict the DSQ 40 three defenses scores.

The total score of SCL90 positively predicts the immature ($P = 0.000$), neurotic ($P = 0.000$), and mature ($P = 0.003$) defenses.

Perception of the disease as severe and incurable negatively predicted neurotic defenses ($P = 0.015$).

## Discussion

The study of the relationship of chronic illnesses with psychological functioning has been an intense field of research.

Janardhan and Bakshi (2002) studied the psychological functioning in patients with multiple sclerosis and concluded that a higher frequency of relapses was associated with lower levels of functioning regardless of the area of functioning evaluated.

Our results are also in agreement with those of Siepman *et al.* (2008), who found that among their patients, increased relapses and severity of symptoms were associated with higher scores on the SCL90 scale. Janardhan and Bakshi (2000) found that severity of illness was a significant inverse predictor of health-related quality of life both in its physical and mental components.

In this study, early age of onset was also associated with low self-efficacy, which is a belief in one's capabilities that determines his/her interaction with the environment.

Patients with low self-efficacy use more neurotic defenses. Their defenses usually include reaction formation, undoing, displacement, isolation, and somatization. The neurotic defenses probably represent a homeostatic process, whether adaptive or pathological, in a group of patients genetically predisposed to the chronic stress of a disease.

In terms of the perception of illness, we found that patients who perceived it as severe and incurable used autistic fantasy and passive aggression more often than those who perceived the disease as curable. These patients did not adapt at a neurotic defense level. They also had a low opinion of their self-efficacy and showed more psychiatric symptoms. Therefore, their perception of the disease and themselves may have determined their defense level of adaption and the use of defenses that reflect their pattern of escape and state of helplessness in the face of stress and ultimately determined the degree and type of symptom occurrence, especially interpersonal sensitivity and depression.

Patients who perceived the disease as curable showed the highest adaptation in the terms of defenses. They used pseudo altruism, a defense style, although considered a neurotic defense in DSQ 40, that is ranked as a high adaptive-level defense in the *Diagnostic and Statistical Manual of Mental Disorders, 4th ed.*, defensive function scale. They had the highest score on SEQ and the lowest score on the SCL scale.

Di Legge *et al.* (2003) reported that core beliefs are central to both the development and the maintenance of anxiety and depression. In our study, self-efficacy was correlated to and predicted by the score of psychiatric symptoms.

Di Legge *et al.* (2003) found a correlation between the perception of illness and psychiatric symptoms of anxiety and depression in patients with chronic physical illnesses, and Bakshi *et al.* (2000) found that coping and perception of illness significantly explained the poor psychological adjustment in these patients.

Our results are in agreement with the previous findings. Patients who perceived their illness as severe and those who also had the lowest self-efficacy scores had not only the worst pathology as evident from the highest SCL90 total score, specifically depression and interpersonal sensitivity, but also the worst coping in terms of defense level, as in autistic fantasy and passive aggression.

As perceptions about self-efficacy affect thought patterns (Halford and Brown, 2009), low belief in self-efficacy results in expectations of poor outcomes and self-hindering thoughts of the disease being a serious one, which may produce more psychiatric symptoms, affect motivation compliance, and worsen the disease.

Julian and Mohr (2006) also found a significant correlation between medical knowledge of the illness and anxiety. Haussleiter *et al.* (2009) found that the factor that determines the specific strategies to deal with threat is the factual knowledge of the condition. Therefore, providing sufficient knowledge on the illness in terms of the causes, consequences, limitations, and purpose and side effects of medications may directly result in fewer symptoms, better coping, and effective compliance.

The use of defense mechanisms as parameters of coping is justifiable. Defenses are coping mechanisms that are unconscious and are more linked to personal disposition and other involuntary ego adaptations, whereas coping styles, differently described by many authors (cognitive, emotional, and social), are more conscious strategies related to health practices (Vaillant, 1992). Freud (1926) stated that the defense mechanisms have a hierarchal relationship with each other, and identified defenses of psychosis, neurosis, and maturity. Freud (1966) suggested that defenses have their own chronology. Authors continued to divide defenses into hierarchal groups and styles (Ham, 1963; Vaillant, 1975, 1976) and relate them to mental health both in normal adults (Erickson *et al.*, 1996) and in psychotic patients, as well as in those with affective disorders (Soliman, 1997).

The psychological defense styles were positively correlated to the psychiatric symptoms as assessed by the symptom checklist SCL90. Multiple sclerosis illness perception affect the psychology and coping mechanisms of the patients especially in the rural culture that support the sick role and handicap attitude of the patient. These factors can have effect on the motivation and the behavior of the patient. Our work is preliminary in showing that the perception of disease affects coping and outcome. An understanding of the role of perception of disease and self-efficacy in shaping behavior provides the opportunity to develop suitable cognitive therapeutic interventions for better well-being.

Another variable that determined self-efficacy in our sample was the number of drugs received. According to Krupp and Rizvi (2002), the use of medication may be a reminder of the patient's own lack of control and the experience of dependence. Although medication clinically appears to provide control of the complications or relapses of the illness, the subjective attitude of the patient may be very different. Despite the degree of control achieved, the patient remains highly aware of the need to depend on an adjunctive agent in order to gain control over his/her life.

Patients on polydrug therapy also showed more dysthymia and symptoms of anxiety, a finding that may indicate either lack of control over the illness or worry, either the patient's or the family's, on having to depend on multiple drugs.

Increased self-efficacy with age and with the status of being married probably reflects the better chances with increasing age and after marriage of mastering experiences and of judging capabilities, which lead to a higher belief in self-efficacy.

The environment in which the person has undergone psychological development affects the patient's well-being. Zagmi and Mohr (2004), examined the association between social, psychological, and physical well-being and degree of illness and sociodemographic variables. They found that self-perception – that is the extent to which patients believed that their lives have been affected by illness – was the most important correlate of well-being. This may be linked to the perception of stigma, which interferes with socialization. In our sample, patients with a fear of stigma were young and had lower self-efficacy and higher stressor and SCL90 scores. They had higher scores on the interpersonal sensitivity, depression, phobic anxiety, and psychoticism scales.

They more frequently used autistic fantasy as a defense mechanism and less frequently used idealization, and they were less frequently married. The fear of stigma increases with the frequency of relapses. A possible explanation for these results is that the high stress of perceived stigma in young patients leads to emotional disturbances, resulting in sensitivity, depression, and anxiety.

Patients indulge in fantasy and become inhibited, with low perception of their capabilities, fewer socialization skills, and fewer opportunities of being married, which results in the development of more symptoms.

Our results are in agreement with those of Chwastiak *et al.* (2002), who found that a patient's perception of stigma was positively and significantly related to helplessness, anxiety, depression, and somatic symptoms. There was also a significant negative association with self-esteem and life satisfaction.

This is in agreement with other recent studies that correlate levels of perceived stigma with psychiatric vulnerability (Janardhan and Bakshi, 2002)

Stigma is due to the shame of having that physical illness and feeling of imperfection. Psychotherapy especially the cognitive therapy can help to change such perception and the accompanied psychological and social consequences.

Although sex did not predict the score of any of the study scales in the multivariate models, women had significantly more psychiatric symptoms, with a specific increase in somatization, interpersonal sensitivity, depression, anxiety, hostility, and phobic anxiety.

Unmarried patients had lower self-efficacy, as shown in the multivariate analysis. Therefore, marriage had a protective effect in our patients in terms of self-concept. This is in agreement with the work of Jefferies (2006), who found that the marital status of the patients was more related to emotional adjustment rather than to mental abilities. Bakshi *et al.* (2000) found that patients' subjective reports of their lower levels of general health were associated with illness severity-related factors of living alone. Earlier age of onset in unmarried patients indicates the adverse effect of early-onset disease on interpersonal relationships.

Older age in our sample correlated with and predicted self-efficacy. It also predicted an increase in psychological symptoms. However, the correlation of age with self-efficacy indicates more opportunities to gain experiences; its prediction of symptoms may be because of an increased accumulation of life events and stressors with increasing age.

Our study is not an epidemiological study and involves a group of patients of a particular age range; hence, the results of the study can only be compared with results from patients with the same characteristics as those in our sample.

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### Conflicts of interest

There are no conflicts of interest.

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