



Quality of life of patients with multiple sclerosis treated at a health institution in Medellín, Colombia

Calidad de vida en pacientes con esclerosis múltiple atendidos en una institución de salud de Medellín, Colombia

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Resumen

Introducción: La calidad de vida relacionada con salud (CVRS) en la esclerosis múltiple (EM), puede verse afectada por factores físicos, clínicos y sociodemográficos. **Objetivo:** Determinar el efecto de factores sociodemográficos, clínicos y físicos en la calidad de vida (CV) de pacientes con EM. **Materiales y métodos:** Se aplicó el instrumento WHOQOL-BREF de la OMS a 173 pacientes de una institución de salud. Se realizó análisis descriptivo de características sociodemográficas, clínicas y físicas y sus puntajes de CV. Se observó la asociación entre CV global con factores sociodemográficos, clínicos y físicos; finalmente, por medio de análisis multivariado. **Resultados:** El 80,3% fueron mujeres, la mediana de edad de 43 años (RIC= 51-35). La fatiga fue el síntoma más frecuente ((71%). Los factores de riesgo para tener peor CV fueron: sexo femenino (RP=6,92. IC 95% 1,8-26,58), alteración en control de esfínteres (RP= 6,10 IC 95% 1,26-29,51), trastornos cognitivos (RP=4,46 IC 95% 1,07-18,56), riesgo de depresión (RP= 3,82 IC 95% 1,01-14,38) y no realizar fisioterapia (RP= 4,48 IC 95% 1,08-18,34). **Conclusiones:** La afectación de CV en la EM, según factores sociodemográficos y clínicos es variable. Evaluar la CVRS en la práctica clínica, permite entender el comportamiento y necesidades del paciente para intervenir factores de riesgo.

Palabras clave: Esclerosis múltiple; calidad de vida relacionada con la salud; personas con discapacidad; actividades de la vida diaria; factores de riesgo. (Fuente: DeCS, Bireme).

Abstract

Introduction: Health-related quality of life (HRQL) in multiple sclerosis (MS) patients can be affected by physical, clinical and sociodemographic factors. **Objective:** To determine the effect of sociodemographic, clinical and physical factors on the quality of life (QL) of patients with MS. **Materials and methods:** The WHO WHOQOL-BREF instrument was applied to 173 patients of a health institution. Descriptive analysis of sociodemographic, clinical and physical characteristics and their QL scores were performed. The association between global QL with sociodemographic, clinical and physical factors was observed; finally, through multivariate analysis. **Results:** 80.3% were women, the median age was 43 years (IQR = 51-35). Fatigue was the most frequent symptom (71%). The risk factors for worse QL were: female sex (RP = 6.92. 95% CI 1.8-26.58), abnormal sphincter control (RP = 6.10 95% CI 1.26-29.51), cognitive disorders (RP = 4.46 95% CI 1.07-18.56), risk of depression (RP = 3.82 95% CI 1.01-14.38) and lack of physiotherapy (RP = 4.48 95% CI 1.08-18.34). **Conclusions:** The effect of QL in MS is variable and depends on sociodemographic and clinical factors. Evaluating the (HRQL) in clinical practice facilitates the understanding of the behavior and needs of the patient required for risk factors intervention.

Key words: Multiple sclerosis; health related quality of life; disabled persons; activities of daily living; risk factors. (Source: DeCS, Bireme).

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Introduction

Multiple sclerosis (MS) is a chronic, degenerative, and autoimmune disease of the central nervous system which affects approximately two million people worldwide. Its onset is typically between 20-40 years of age. Within its principal symptoms are included diminished vision and motor functions, sensory disturbance, fatigue, depressive and cognitive disorders. MS has an unpredictable course, as well as its gravity and prognosis. There are three kinds of MS: a) Relapsing-Remitting MS (RRMS) in which outbreaks occur with variable duration, with complete or partial recuperation of symptoms in days or months, and it affects approximately 85% of the population; b) Secondary-Progressive MS (SPMS) which begins as RRMS and worsens progressively with time with or without the presence of outbreaks; c) Primary-Progressive MS (PPMS) which has slow onset and progressive worsening of symptoms at a constant rate without outbreaks and affects 10% of individuals^(1,2).

The treatment of MS has three categories: relapse management, modified therapies for the disease, and symptom management. The objective of the treatment is to diminish the velocity of the progression of the disease's disability and frequency of relapses. The modified therapies of this disease are divided into: modified effectiveness or initial therapies and of these are interferon beta 1A and 1B which have different application forms, glatiramer acetate, teriflunomide and dimethylfumarate; and therapies of high effectiveness or second line: fingolimod, natalizumab, alemtuzumab, and ocrelizumab which was recently approved and is the sole one indicated for primary progressive forms. Fampridine is an adjuvant medication indicated for improvement of patient functioning with MS with an Expanded Disability Status Scale (EDSS) between 3-7⁽³⁻⁶⁾.

The deterioration of the health-related quality of life (HRQoL) has been associated to functional limitations, cognitive difficulties, and emotional problems^(7,8). This, in turn, is associated with an indirect cost of productivity which results in the increase of public costs such as penalties for early workforce absenteeism, disability and anticipated retirement⁽⁹⁻¹¹⁾.

Within the current integral management of people with MS, an assessment of HRQoL has been developed which provides information about the needs of the patients and/or the complications usually not detected by the health team. This is a key element to evaluate the treatment and the need for additional interventions^(7,8,12). The common instruments to assess quality of life (QL) can be either (i) generic ones that are used to compare populations and analyze the behavior of diseases, or (ii) specific ones that include aspects according to the clinical characteristics of the pathology and their results have a better capacity for prediction and discrimination to evaluate changes and effects over time^(7,13-16).

There are few studies about QL in Latin America. In Panama, it was found that the dimensions of mobility and life's normal activities were the most affected by the progression of the disability, while anxiety/depression affected all stages of the disease⁽¹⁷⁾. Multiple studies have compared Argentinean and European populations, mainly from Spain, and it was observed that the main determinants of a decrease in HRQoL were associated with clinical variables (disability status, disease duration and symptoms such as fatigue and depression) as well sociodemographic variables (age and sex)^(1,7).

This study was aimed at studying the effect of sociodemographic, clinical and physical factors on the quality of life of patients with multiple sclerosis treated at a health institution in Medellín, Colombia.

Materials and methods

A cross-sectional study for the analysis of 173 patients with MS treated at Mediacarte Medellín was carried out during December 2016 to February 2017. The WHOQOL-BREF instrument of the World Health Organization (validated during 1990-1999 for Latin American adult populations) was applied to obtain a widely accepted definition of quality of life, which could be applied to both general and diseased populations. The initial use of the WHOQOL-100 was followed by the selection of the best question of each of its components, resulting in the WHOQOL-BREF, which has 26 questions for each of the 24 components that are part of this instrument⁽¹⁸⁾. The WHOQOL-BREF also includes two questions that separately assess global QL and satisfaction with overall health. The Likert-type response options generate a profile of

four dimensions or domains: physical health, psychological health, social relationships and environment, with the result being extrapolated to the full scale. The Expanded Disability Status Scale (EDSS) is based on seven functional groups to assess the degree of patient dysfunction from zero (normal) to 10 (death by multiple sclerosis)⁽¹⁹⁾.

The Zung scale was applied to evaluate the depression risk. This instrument has 20 items that investigate four common suicide features: the dominant effect, physiological equivalents, other disturbances, and psychomotor activities. The scale has ten positive and ten negative questions, each with four response options scored from one to four. The overall score ranges from 20 to 80, with a significant cut-off point of 40 for depressive symptoms. Thus, the higher the score, the greater the severity of symptoms that suggests depression. Finally, the values are converted by multiplying them by 1.25 so that the reported scores are between 25 and 100 points⁽²⁰⁻²³⁾. A pilot test was carried out, where 10 patients were randomly chosen to examine the methodology and adjust the questions as well as the time-length of the survey. Proper adjustments to the questionnaire were made and the co-investigator was properly trained for the completion of the instrument by each patient.

The information was complemented with records obtained from the medical history and/or neurology or general medicine consultations. Patients were inquired about sociodemographic variables such as: age, gender, marital status, changes in marital status due to the disease, living situation, maximum level of education, employment status, work performance due to the disease (measured as: equal, decreased due to increased tiredness, a decrease in number of hours, serious impairment resulting in job change or dropout), difficulties in establishing/maintaining workplace relationships due to the diagnosis, and financial assistance because of MS. The study also covered clinical variables, including: progression rate of the disease, start time of the first treatment, current medication, number of relapses during the last year, current clinical manifestations, use of medications for symptomatic management, presence of comorbidities (hypertension, diabetes mellitus, hypothyroidism, dyslipidemia, and body mass index). Finally, the following are the physical variables that were analyzed: need of some type of walking aid (none, cane, walker, and wheelchair), physical

therapy at the time of the study and number of sessions per week. The QL questionnaire was conducted by the principal investigator.

Patients who met the diagnostic criteria of McDonald 2010 (which includes the number of outbreak episodes, signs of dissemination of the lesions in time and space through contrasting magnetic resonance imaging, and observation of oligoclonal bands in cerebrospinal fluid)^(24,25) and gave their consent to participate. Patients under 18 years of age were excluded as well as those who were not diagnosed with MS during the data collection period or suffered of another associated neurological disease and had an EDSS score higher than 8.5 due to their high cognitive and physical complications. Regarding the quality control process, a verification procedure was carried out with a random sample of 10% of digitized surveys in addition to double entry and verification of the database.

A descriptive analysis was carried out on the sociodemographic, clinical and physical variables as well as on the scores of each domain of the WHOQOL-BREF questionnaire. According to whether the variables follow, or not, a parametric distribution, they were expressed as mean and standard deviation (SD) or median and interquartile range (IQR). An association of sociodemographic, clinical and physical factors with the global QL (defined as better or worse QL) was analyzed through the Chi-square statistical test. A binary multivariate logistic regression model was constructed using the forward Wald method, in which the QL was used as dependent variable. It was necessary to dichotomize this variable since its original value was the same as the global QL, which was obtained in a scale from 1 to 5. The Prevalence Ratio (PR) adjusted for each variable was calculated. A 95% confidence level was used for the hypothesis tests, with an alpha error value of 5%. The SPSS version 21 software was used for the statistical analyses.

Ethical considerations

This research was based on the Article 11 of Resolution 8430 of 1993 of the Health Ministry of Colombia and it was classified as a minimal risk study. All participants signed the informed consent form. Approvals from the Ethics Committee of CES University and Medicart S.A. were obtained and this work was financed by the authors.

Results

80.3% of the total of patients (173) were women with a median age of 43 years (IQR= 35-51 years). The minimum and maximum ages were 20 and 74 years, respectively, and the woman to man ratio was 4:1. The percentages of single and married patients were 39.3% and 38.2%, respectively. The maximum education level was undergraduate/graduate (45.65), followed by technician/technologist (27.7%). 26.5% of patients lived with their spouses and children, 24.9 with parents, and 9.9% lived alone. 35.8% of participants were employed, 28.9% were pensioned due to their disease, whereas 14% and 13.3 worked independently and as housewives, respectively. From those patients that still had a job, 24.3% reported having the same work performance despite the disease. In contrast, 30% claimed that their performance had slightly decreased and got easily tired. Finally, 17% of employed patients stated that their performance was severely affected, reason by which they had to change jobs or quit (Table 1).

RRMS, SPMS and PPMS had prevalence rates of 82.1%, 14.5% and 3.5%, respectively. 73.4% of participants did not present any relapse during the last year. It was found that 11.6% of patients decided not use any immunomodulatory medication. During the last month, the most frequent clinical manifestations were fatigue (71.7%) and sensory symptoms (54.3%), whereas 91% of them were at risk of depression. In addition, it was observed motor symptoms (40.5%), brainstem symptoms (27%), visual impairments (31.8%), pain (37%), sphincter control alterations (45.7%), cognitive disorders (35.3%), and sexual disorders (19.7%). In addition to immunomodulatory medication, the most commonly used were pain medication and antidepressants (42% and 34.1%, respectively), followed by medicaments against fatigue and spasticity (11.6% and 8.7%) as well as fampridine to improve walking function (8.7%) and medications for the management of urinary symptoms (8.1%) (Figure 1).

14.5% of patients had hypertension, 11.6% hypothyroidism, 10.4% dyslipidemia, and 4.6%

diabetes mellitus. According to the EDSS scale, 66.5% were between 0 and 2 points and 5.8% had 8.0. 67% of patients did not require any type of walking support and 31.2% received physical therapy. The analysis of the WHOQOL-BREF questionnaire revealed that the overall QL had a median of 4 (quite good), whereas the median for health satisfaction was 3 (normal) and the physical domain was the most affected (Table 2).

A variable dependent on quality of life was constructed, which had the categories of "0=less than 3 points" and "1=equal or greater than 3 points" based on the calculation of the first quintile previously made. Thus, 20% of the surveyed patients had a score equal or lower than 3 (lower scores), which represents the worst quality of life.

In terms of sociodemographic factors, the Chi-square test of independence revealed an association between QL and gender, level of education, changes in work performance, and the fact of receiving financial assistance due to the disease.

Regarding clinical factors, it was found an association between QL and patients with Primary-Progressive SM who had sensory symptoms, motor symptoms, brainstem symptoms, fatigue, sphincter control disorder, cognitive disorders, depression risk, medication use for pain and spasticity. These variables were included in the logistic regression model (Table 1).

Finally, the multivariate logistical regression analysis found that being female, having sphincter control dysfunction, having cognitive disorders, having risk of depression and the lack of physical therapy, all accounted for 37% of the negative impact on the QL. When adjusting for the rest of the factors, which functioned as risk factors that affect the QL of patients with multiple sclerosis when adjusting for the other factors (but this high PR with a wide 95% CI), an inaccurate estimate is observed, probably due to the size of the sample (Table 3).

Table 1. Sociodemographic, clinical and physical factors associated with the quality of life of treated patients with multiple sclerosis

Variables	Quality of life				p value X ²	PR (95% CI)
	Worse		Better			
	n	%	n	%		
Gender						
Female	10	55.6	129	83	<0.0001	1
Male	8	44.4	26	17		0.30 (0.13-0.71)
Máximum level of education					0.05	1
Udergraduate/Graduate	6	33.2	73	47.3		4.38 (1.44-13.31)
Elementary	4	22.2	8	5.2		1.54 (0.46-5.14)
Secondary	4	22.2	30	19.2		1.09 (0.32-3.69)
Technician/technologist	4	22.2	44	28.3		
Changes in work performance of working patients					<0.0001	1
Same performance	2	12.5	40	35.1		1.61 (0.31-8.39)
Slight reduction; get easily tired	4	25	48	42.2		3.00 (0.31-28.84)
Significant reduction; lower number of hours	1	11.1	6	5.2		6.51 (1.51-27.98)
Severely affected; job change or stop working	9	56.2	20	17.5		
Beneficiary of financial assistance due to the disease					0.02	1
Yes	4	22.2	8	5.5		3.83 (1.49-9.85)
No	14	77.8	147	95.4		
Type of multiple sclerosis					0.03	1
Relapse Remission	11	61	131	84.5		4.30 (1.21-15.26)
Progressive primary	2	11	4	2.6		2.58 (0.98-6.79)
Progressive secondary	5	28	20	12.9		
Use of pain medication					0.02	1
No	6	33	96	61.9		1.72 (0.83-3.56)
Yes	12	67	59	38.1		
Use of spasticity medication					0.03	1
No	13	72	140	90.3		2.87 (1.18-6.96)
Yes	5	28	15	9.7		
Sensory symptoms					0.04	1
No	4	22	75	48.4		1.50 (1.12-2.01)
Yes	14	78	80	51.6		
Motor symptoms					0.005	1
No	5	28	98	63.2		1.96 (1.37-2.79)
Yes	13	72	57	36.8		
Brainstem symptoms					0.04	1
No	9	50	116	74.8		1.98 (1.16-3.39)
Yes	9	50	39	25.2		
Fatigue					0.02	1
No	1	5,6	48	31		2.28 (1.83-2.84)
Yes	17	94.4	107	69		
Sphincter control alteration					0.001	1
No	3	17	91	58.7		2.01 (1.52-2.66)
Yes	15	83	64	41.3		
Cognitive disorders					0.001	1
No	5	28	107	69		2.32 (1.60-3.37)
Yes	13	72	48	31		
Risk of depression					0.02	1
No	6	33	10	6.5		0.71 (0.51-0.99)
Yes	12	67	145	93.5		
Currently doing physiotherapy					0.18	1
Yes	3	16.7	51	33		0.50 (0.17-1.45)
No	15	83.3	104	67		

Figure 1. Percentage distribution of current treatments of patients in Medicarte (Medellín) during 2017

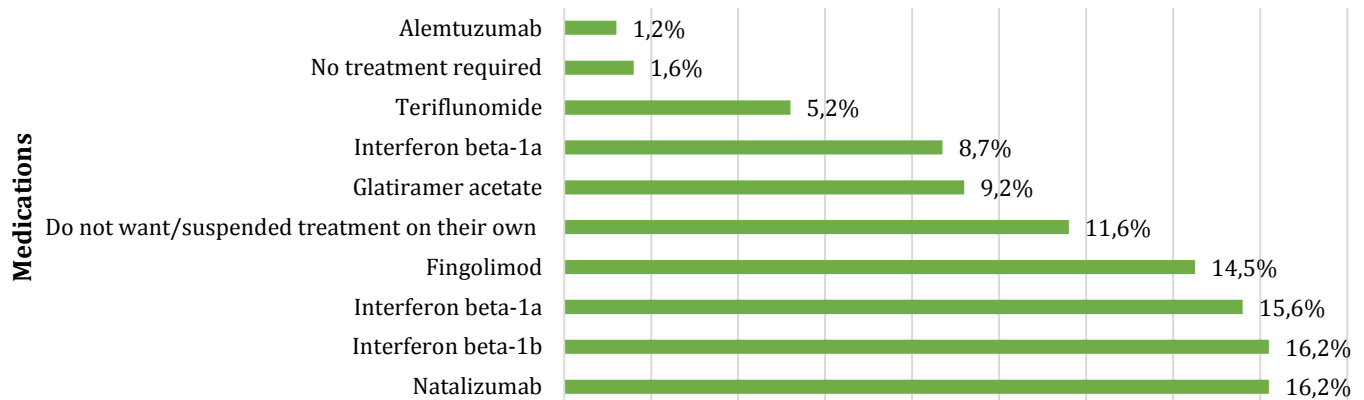


Table 2. Summary of indicators of quality of life domains included in the WHOQOL-BREF

Variable	Median	SD	Median	IQR (Q3-Q1)	Variation coefficient
Overall quality of life score*	3.61	0.94	4	4.0 - 3.0	26.03
Health satisfaction score*	3.31	1.06	3	4.0 - 3.0	32.02
Physical domain score**	45.99	17.51	44	56 - 34.5	38.07
Psychological domain score**	65.65	17.7	69	81 - 50	26.96
Social domain score**	63.39	28.63	56	94 - 44	45.16
Environment domain score**	70.04	19.76	69	88 - 56	28.21

*Scale from 1 to 5 ** Scale from 0 to 100

Table 3. Multivariate logistic regression of the overall quality of life according to the characteristics of patients with multiple sclerosis

Variable	β	Standard error	Wald	p value	PR	95% CI
Gender	-1.93	0.68	7.93	0.005	6.92	1.8 -26.58
Sphincter control alteration	1.81	0.80	5.07	0.020	6.10	1.26 -29.51
Cognitive disorder	1.49	0.72	4.22	0.040	4.46	1.07 -18.57
Depression risk	1.33	0.67	3.89	0.040	3.82	1.01 - 14.38
Currently receiving physical therapy	1.49	0.72	4.28	0.030	4.48	1.08 - 18.34
Constant	2.76	0.70	15.59	0.000	15.91	

Reference category: *gender: female **No alteration in sphincter control **No cognitive disorder ****No risk of depression *****Currently receiving physical therapy

Discussion

MS causes inflammatory and degenerative changes that lead to a variety of symptoms that compromise self-care and independence of patients and also can be associated with depressive disorders, which affect social, work and family relationships^(17,26). 29% of the patients retired because of illness, which was associated with missing work for a variety of causes, the most important being an increase in disability and physical sequelae that deteriorate work performance.

According to the 2016 Global MS Employment Report, 43% of people left their jobs three years after being diagnosed, with a 70% increase after 10 years⁽²⁷⁾. It is for this reason that one should study the causes of missing work within this population in order to develop inclusive policies to prevent the loss of work capacity early on and reduce public costs such as pensions for disability.

Fatigue, described as a sensation of tiredness to perform physical or intellectual activities, disproportionate to the type of effort that is made and the degree of disability that occurs. Fatigue is one of the most frequent symptoms in MS patients and affects almost 80% of patients, it is also associated with worsening of other symptoms, limitation of physical and occupational functions of patients, and in some cases is the main cause of job quitting. Fatigue as well as altered mood have been related to impaired cognitive functioning in people with MS^(7,13,28,29). The presence of sensory symptoms and fatigue have a negative impact on daily life activities because of a decrease in the feeling of vitality during the day and worsening of physical function, which are reflected in the deterioration of the QL and increase of work absenteeism^(8,12,30-32).

We observed that 90% of the participants in our study had a mild or moderate risk of depression that was assessed through the Zung test. According to Olascoaga⁽¹³⁾, the presence of psychological factors negatively affects QL due to increased fatigue levels, physical dysfunction, increased pain, cognitive disorders, and sleep disorders, which may reflect a lack of adherence to treatment and a decline in QL of people with MS that can trigger a worse prognosis^(12,32-36).

The lack of physical therapy in our studied population was a risk factor for a poorer QL. It has been shown that physical activity in MS patients represents a non-pharmacological intervention that has beneficial effects on the cognitive functional capacity and it should be included within the treatment of people with MS^(28,37-41). Since the reasons for not performing physical therapy were not asked, one should study whether it is due to barriers to access to health services or there are other causes.

The differences between the scores of the QL dimensions may be due to a diversity in the presentation of clinical manifestations in patients and the perception they have about the impact of those manifestations on their QL, which affects each dimension differently. However, it was observed that the physical dimension was the most affected. The combination of generic and specific scales provide better information about the SM symptoms and their impact on the QL. In the validation study of the Multiple Sclerosis International Quality of Life questionnaire (MusiQoL), it was found that the factors affected the overall score of the questionnaire

were low education level, high EDSS, cognitive disorder, and being single. On the contrary, being a woman, being older, and higher EDSS affected more the physical domain of the QL questionnaire, which indicates that despite the variety of MS symptoms, the factors that affect the QL have a similar behavior in all patients^(7,8,12,14-16).

Given the fact that the sample was convenient for the characteristics of the patient care, it is not possible either to infer the results for all patients with multiple sclerosis or to attribute causality to the factors found as associated with QL. The HRQL instrument used was generic because there was no an specific one at the time of the study due to difficulties with the license, nor were specific questionnaires used to assess fatigue. QL may be affected by other aspects not included in this study such as support network, access to health services, economic capacity, etc. In reference to the presence of comorbidities, no diagnostic criteria was investigated to define their presence of comorbidities or whether these comorbidities were adverse effects due to the use of medications.

Conclusions

It was observed that the main risk factors that compromise the quality of life of patients with multiple sclerosis were being a woman, having sphincter control disorder, having cognitive disorders, having a depression risk, and a lack of physical therapy. MS has an unpredictable course, being the reason why its impact on QL is different in each person, which depends on sociodemographic and clinical factors.

Recommendations

Future studies should focus on fatigue and the development of strategies to reduce it, so that patients can improve their quality of life and work performance. The assessment of HRQoL within daily clinical practice allows a better understanding of the unmet needs of this population and an intervention of susceptibility factors (functional and cognitive capacity) and barriers to access to the health system, which facilitate the development of comprehensive care programs that include non-pharmacological options such as psychological support and physical therapy. These key elements have shown to be beneficial for the cognitive and functional capacity as well as QL of people with MS.

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Conflict of interests: The authors declare that they have no conflict of interest.

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