

## The impact of fatigue and depression on quality of life in multiple sclerosis patients in a tertiary MS Center



ARISTOTLE  
UNIVERSITY OF  
THESSALONIKI

I. Nikolaidis<sup>1</sup>, C. Bakirtzis<sup>1</sup>, M. Boziki<sup>1</sup>, E. Kesidou<sup>1</sup>, O. Bogiatzidou<sup>2</sup>, I. Vilou<sup>2</sup>, E. Athanasiou<sup>2</sup>, I. Skiadopoulou<sup>2</sup>, E. P. Kouki<sup>2</sup>, T. Tatsi<sup>1</sup>, N. Grigoriadis<sup>1</sup>

<sup>1</sup>2<sup>nd</sup> Department of Neurology, AHEPA University Hospital, Aristotle University of Thessaloniki, Greece.

<sup>2</sup>School of Psychology, Aristotle University of Thessaloniki, Greece.



### Introduction

Fatigue is one of the most common symptoms among MS patients, as its prevalence reaches almost 80%. It also inflicts severe changes in the individual's autonomy and functionality. Depression may increase fatigue, and, as expected, result in poorer quality of life, as it is reported by the individuals themselves (Fruewald, Loeffler-Stastka, Eher, Saletu, & Baumhacki, 2001; Jones, Ford, Jones, John, Middleton, Lockhart-Jones, ... & Noble, 2013). Hence, there is a need to investigate fatigue's and depression's impact on how MS individuals view their own physical, functional and emotional well-being. Based on this rationale, we examined the impact of fatigue and depression on quality of life in 78 Multiple Sclerosis patients. We hypothesized that depression and fatigue would negatively affect a person's self-reported quality of life, as related to functional outcome and emotional state.

### Results

A retrospective analysis was performed using records of Relapsing-Remitting Multiple Sclerosis (RRMS) patients. Seventy-eight patients (m=26, f=52) were included (mean age: 40.67±1.4). Mean disease duration was 10.44 ± 1.15 years, and mean EDSS score was 3.48 ± 0.37. A multiple regression analysis by the use of a General Linear Model was conducted with EuroQoL scores as dependent variables. We used the Modified Fatigue Impact Scale (MFIS; Ritvo, Fischer, Miller, Andrews, Paty, & LaRocca, 1997), Depression Anxiety and Stress Scales (DASS-21; Lyraeos, & Arvaniti, 2008), The Multiple Sclerosis Impact Scale (MSIS-29; Riazi, Hobart, Lamping, Fitzpatrick, & Thompson, 2002) and Beck Depression Inventory (BDI; Beck & Steer, 1993) scores as potential predictors, along with age, gender, and disease duration. In order to control for multicollinearity, a Pearson's Correlation Coefficient was conducted for independent variables' scores. The instruments demonstrating multicollinearity were used in the model separately. Analysis was conducted with SPSS 23.0.

Means and standard deviations for each scale are displayed in Table 1. For total EuroQoL score, MFIS was a strong predictor ( $p<0.001$ ). Similarly, when BDI was included in the model instead of MFIS, it was considered an important predictor of EQ total score ( $p<0.001$ ).

Table 1. Means and Standard Deviations for every questionnaire ( $n=78$ ).

	Mean (SD)		Mean (SD)
MFIS	26.97 (2.19)	EuroQol mobility	1.62 (0.061)
BDI	3.73 (0.48)	EuroQol independence	1.19 (0.05)
DASS-21	13.95 (1.35)	EuroQol activity	1.41 (0.06)
MSIS-29	55.67 (2.39)	EuroQol pain	1.6 (0.08)
		EuroQol stress	1.82 (0.07)
		EuroQol total	69.74 (2.17)

Overall, a strong predictive value of the models was shown ( $p<0.001$ ). MFIS, DASS-21, MSIS-29 and BDI scores were strongly correlated with each other, as shown for MFIS scale and DASS ( $r=0.654$ ,  $p<0.001$ ), MSIS-29 ( $r=0.784$ ,  $p<0.001$ ) and BDI ( $r=0.622$ ,  $p<0.001$ ). For total EQ score, MFIS was a strong predictor ( $p<0.001$ ), whereas age, gender and disease duration were not ( $p=0.183$ ,  $p=0.876$ ,  $p=0.788$ , respectively). Similarly, when DASS-21 was included in the model instead of MFIS, it significantly predicted EQ total score ( $p<0.001$ ). MSIS-29 was also a strong predictor for EQ total score ( $p<0.001$ ), as well as BDI ( $p<0.001$ ). Overall a strong predictive value of the models was shown ( $p<0.001$ ) when MFIS, DASS-21, MSIS-29 and BDI scores were individually included.

### Discussion

Our data show that fatigue and depression are strong predictors of quality of life in MS. That is, emotional distress scales (DASS, BDI) predicted perceived quality of life, and self-reported fatigue symptoms affected the participants' view on their outcome (mobility, autonomy, activities, stress and pain), as well as general well-being. It is expected that follow-up sessions will provide insight on long-term effects of these factors on the well-being of individuals with MS. Additionally, patients would benefit from future interventions designed to target mental and physical difficulties following fatigue, combined with intensive treatment of depressive symptoms so commonly reported in this population.

### Literature

Beck, A. T., & Steer, R. A. (1993). *Beck anxiety inventory manual*. San Antonio, TX: The Psychological Corporation.

Fruewald, S., Loeffler-Stastka, H., Eher, R., Saletu, B., & Baumhacki, U. (2001). Depression and quality of life in multiple sclerosis. *Acta Neurologica Scandinavica*, 104(5), 257–261.

Jones, K. H., Ford, D. V., Jones, P. A., John, A., Middleton, R. M., Lockhart-Jones, H., ... & Noble, J. G. (2013). How people with multiple sclerosis rate their quality of life: an EQ-5D survey via the UK MS register. *PLoS One*, 8(6), e65640.

Lyraeos, G., & Arvaniti, C. (2008). *Greek Translation of the DASS*. Psychology Foundation of Australia.

<http://www2.psy.unsw.edu.au/groups/dass/translations.htm>.

Rabin, R., & Charro, F. D. (2001). EQ-SD: a measure of health status from the EuroQol Group. *Annals of medicine*, 33(5), 337-343.

Riazi, A., Hobart, J. C., Lamping, D. L., Fitzpatrick, R., & Thompson, A. J. (2002). Multiple Sclerosis Impact Scale (MSIS-29): reliability and validity in hospital based samples. *Journal of Neurology, Neurosurgery & Psychiatry*, 73(6), 701-704.

Ritvo, P. G., Fischer, J. S., Miller, D. M., Andrews, H., Paty, D. W., & LaRocca, N. G. (1997). *Multiple Sclerosis Quality of Life Inventory: A User's Manual*. New York: National MS Society.