Quality of Life in Multiple Sclerosis Patients: Influence of Gender, Age and Marital Status

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ABSTRACT

Background: Multiple sclerosis (MS) is a chronic disease characterised by a wide range of symptoms and a highly unpredictable prognosis, which can severely affect patient quality of life (QOL). The aim of the study was to evaluate the influence of gender, age and marital status on health-related quality of life (HRQoL) in MS patients. Objective: This study included 100 MS patients treated at the Department of Neurology, Clinical Center University of Sarajevo. Inclusion criteria were an Expanded Disability Status Scale score between 1.0 and 6.5, age between 18 and 65 years, stable disease on enrollment. HRQOL was evaluated by the Multiple Sclerosis Quality of Life-54 questionnaire (MSQoL-54). Mann-Whitney and Kruskal-Wallis test were used for comparisons. Linear regression analyses were performed to evaluate prediction value of gender, age and marital status on both physical and mental HRQOL. Results: Women had significantly lower QOL scores then men in pain scale (55.00 vs. 76.67; p<0.05). Younger patients had better physical (54.58 vs. 37.90; p<0.05) and mental health (59.55 vs. 45.90; p<0.05) composite scores. Patients with earlier age of onset scored significantly higher in health perception domain scale (45.00 vs. 32.50, p<0.05). Married patients scored higher in physical and mental composite scores but with no significant difference except in sexual function (87.51 vs 70.86, p<0.05) and emotional well being (66.67 vs 33.33; p<0.05) scales. Patient age retained its independent predictivity of physical health composite score (r²=0.063). Conclusion: Aging in MS proved to be important negative factor in predicting physical domains of QOL. Interventions for reducing difficulties caused by physical limitations in older patients, higher level of psychological support for patients with late onset disease and social support for those living alone are important factors in improving HRQOL in MS patients.

Keywords: QOL, gender, age, marital status.

1. BACKGROUND

Multiple sclerosis (MS) is a chronic neurodegenerative condition characterised by a wide range of symptoms and a highly unpredictable prognosis, which can severely affect patient quality of life (QOL) (1). Many studies show that persons with MS have lower QOL even when comparing with persons with other chronic diseases such as epilepsy and diabetes mellitus (2). While physical disability is well recognized in MS patients, it does not necessarily reflect all aspects which patients should consider as important once in their life (3). Besides physical disability, emotional and psychological status, lower QOL in MS patients can also be influenced by some sociodemographic factors. The findings show the importance of clinical, psychosocial and demographic variables as QoL risk and protective factors (4). Due to different hormonal states, social and family roles, the impact of MS is different between women and men. The risk for development of multiple sclerosis became higher in women than in men (2.3–3.5:1) during the last decades, with true increase among the women but not the men (5). This rapid increase probably reflects unidentified changes in the environment or nutrition, while the effects of gender on clinical features of MS are not as clear (6). Still, studies show that female patients have better outcome of the disease by having earlier disease onset, slightly lower prevalence of primary progressive disease course and less
implementing interventions to increase MS patients' QoL. On the other side, depression, as the most favorable predictor of lower QoL in MS patients, is more common in women considering general population (8-10). Although it has been found that persons with MS have shorter lifespan than age- and sex-matched persons from general population, most of the MS patients is getting old with MS (11). The average age and life expectancy of persons with multiple sclerosis have increased significantly during the last two decades (12). The average age of persons with multiple sclerosis is rising according to large administrative databases (13). The introduction of disease-modifying therapies and a better delineation and understanding of the superimposed comorbidities often diagnosed in MS patients are probably the most important factors accountable for the increase in aging MS population worldwide (14). Older MS patients have more significant physical and cognitive limitations, mobility difficulties and social isolation issues than younger patients. Ageing is also accompanied by more comorbidities, medications use and other changes in life styles that can influence different aspects of QoL in persons with MS. Since the diagnosis of multiple sclerosis and unpredictable course of the disease can be devastating, social support might have important role in everyday activities and quality of life in MS patients. Support is defined as resources received due to interactions with other people (15). There are three types of resources identified in the context of support such as emotional support (attention, understanding of patients' emotions and most of all, promoting their self-esteem), informative support (an advice helping patients to understand their medical problems, etiology and management) and the practical support which provides patients with physical and financial help and help necessary for specific activities (16). The previous research has suggested that there is a significant positive correlation between marital status, with HRQoL in patients with chronic diseases (17, 18). Married patients have reported better sexual function than that of patients who were unmarried (17). Married persons with multiple sclerosis or those living with partner showed to have better QoL than single persons with MS only in the relationships with friends, relationships with health care system and sentimental and sexual lifes domains (19). Using QoL measures may provide clinicians with the information regarding the general health status of MS patients who might otherwise go unrecognized with high recommendations for using them in clinical practice (20). MS patients QoL is often measured by the Multiple Sclerosis Quality of Life (MSQoL)-54 questionnaire, which is considered to be the most common and standardized disease-specific instrument for the assessment of QoL of MS patients (21). Since large numbers of worldwide studies that investigate HRQOL in MS patients still show some inconsistencies of findings, careful assessment is needed. The results of this study are expected to provide more information in planning and implementing interventions to increase MS patients' QoL.

2. OBJECTIVE

The aim of the study was to evaluate the influence of gender, age and marital status on health-related quality of life (HRQoL) in MS patients at different stage of the disease.
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| Patient age (years) | Number of patients | % |
|---------------------|--------------------|---|
| 18-24               | 4                  | 4 |
| 25-34               | 29                 | 29|
| 35-44               | 31                 | 31|
| 45-54               | 26                 | 26|
| >55                 | 10                 | 10|
| Total               | 100                | 100|

Table 1. Patient age at the time of investigation (N=100)

| MSQOL-54*domain | Median value of physical health composite score (25th-75th percentile) | P     |
|-----------------|------------------------------------------------------------------------|-------|
| Physical function | 55.00 (30.00-78.75) vs. 22.50 (15.00-53.75)                            | <0.001|
| Role limitations-physical | 25.00 (0.00-93.75) vs. 0.00 (0.00-0.00)                               | <0.001|
| Role limitations-emotional | 66.67 (0.00-100.00) vs. 33.33 (0.00-66.67)                            | 0.016 |
| Pain             | 68.33 (40.00-92.92) vs. 59.17 (31.67-76.67)                            | NS    |
| Emotional well-being | 64.00 (48.00-76.00) vs. 60.00 (44.00-67.00)                            | NS    |
| Energy           | 56.00 (40.00-64.00) vs. 46.00 (32.00-56.00)                            | 0.007 |
| Health perceptions | 47.50 (26.25-65.00) vs. 30.00 (15.00-40.00)                            | <0.001|
| Social function  | 66.67 (41.67-83.33) vs. 45.83 (25.00-58.33)                            | 0.008 |
| Cognitive function | 75.00 (65.00-90.00) vs. 62.50 (50.00-80.00)                            | 0.005 |
| Health distress  | 60.00 (30.00-78.75) vs. 47.50 (22.50-68.75)                            | 0.076 |
| Overall quality of life | 55.00 (45.00-68.35) vs. 50.00 (36.65-58.35)                            | 0.010 |
| Sexual function  | 91.68 (58.28-100.00) vs. 58.28 (33.00-79.19)                            | <0.001|
| Satisfaction with sexual function | 50.00 (50.00-75.00) vs. 50.00 (25.00-50.00)                            | 0.019 |
| Change in health  | 25.00 (25.00-50.00) vs. 25.00 (0.00-50.00)                             | NS    |
| Physical health composite score | 54.85 (33.34-73.49) vs. 37.90 (27.15-45.65)                            | 0.002 |
| Mental health composite score | 59.55 (42.51-81.75) vs. 45.90 (37.24-67.16)                            | 0.007 |

Table 2. Multiple Sclerosis Quality of Life questionnaire (MSQOL-54) scores according to patient age. *Multiple Sclerosis Quality of Life questionnaire-54

5. DISCUSSION

There were no significant differences in physical and mental health QOL composite scores between women and men in this study. These results are consistent with findings in many studies (23-26). On the other side, one study showed that male sex was related to poorer QOL in MS patients (27). Another study also reported lower scores of QOL in men but only in the physical QOL dimensions (28). Additionally, physical disability showed higher impact on quality of life in men than women, especially on mental HRQOL (29). Still, there is a study suggested that male gender is among contributing factors for better HRQOL (30). Our study also showed that women had significantly lower QOL scores then men in pain domain scale. This finding might be explained by different pain thresholds between women and men caused by different genetics, environmental and psychosocial factors, taking into account that pain is one of the important predictive factors of HRQOL. It is concluded that a higher degree of female social roles were associated with lower thresholds and less tolerance to pain, as well as a greater natural tendency to communicate pain sensation (31). Women also consider men, in general, to be more tolerant to pain, less willing to report pain, and less sensitive to it (32). The results are in accordance to conclusions that men and women have different responses to pain and increased pain sensitivity and risk for clinical pain was commonly observed among women (33). Although the causative factors underlying these sex differences are still not known, it seems that multiple biological and psychosocial processes are contributing factors (34). Evidence suggest that genotype and endogenous opioid functioning play a causal role in the sex differences, indicating that sex hormones influence pain sensitivity (35). The results of this study showed that younger persons with MS had better both physical and mental HRQOL which are similar to those in other studies (24, 30, 36-40). This study also showed that the most significant difference in QOL between younger and older MS patients was mostly in physical domains such as physical function, role limitations-physical, sexual function and health perception. On the other side, difference in emotional well-being subscale considering age was not significant. These results indicate that lower QOL in older MS patients is mostly influenced by limitations caused by physical disability, while emotional limitations are less

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presented probably due to development of positive coping mechanisms and adaptation to the disease as it progresses over time. The similar results were presented in recent study which showed that age had a direct relationship with mental HRQOL, and mental HRQOL increased by 0.64 with each passing year of patients with MS, while physical QOL showed a decrease by 0.24 for every 1 year (41). These results were explained by possible decreased life expectations with aging. Neurological impairment and physical disability, as indicators of the age-associated increase in physical impairment, were identified as risk factors for QoL in MS (42). Sonya Slifka study results found that although most people live alone over the age of 65 years they view their health with a positive outlook, and so they tend to adapt more over time as the disease progresses (43). Lower educational level and at least one comorbid condition of middle-aged and older people compared with younger people is found to have negative influence on physical HRQOL in one study (44). Urinary disorders are related to poorer QOL especially among older MS patients (45). According to one study, mental HRQOL increases in women and decreases in men as they get older (46). Our results showed that patient age was independent predictive factor of physical but not mental HRQOL, which is in accordance to the results of other studies indicating importance of developing coping strategies and emotional well being in MS patients in order to improve their QOL. Patients with earlier age of onset scored significantly higher in health perception domain scale in our study. These results might be explained by better adaptation to the health related problems and overall life expectations in patients with earlier onset of disease. One study showed better both physical and mental health composite scores in patients with onset of the disease in earlier age (28). The results might be also observed within the facts that patients with disease onset at older age are at higher risk for initial development of primary progressive disease type, sooner conversion to secondary progressive MS and reaching higher disability over shorter period of time. Married patients in our study scored higher then single patients (unmarried, widowed, divorced) in both physical and mental health composite scores, but significant difference was observed only in sexual function and emotional well being domains. Being married also showed to be predictor of better QOL in some studies (27, 40). These findings could be explained in accordance to the results of other studies that proved positive relation of social support, participation and individual’s psychological resources such as self-esteem and self-compassion with QOL (47–49).

6. CONCLUSION

Aging in MS proved to be important negative factor in predicting physical domains of QOL, while earlier age of onset showed positive influence on health perception in MS patients. Considering gender, only presence of pain showed significant impact on QOL with lower scores in women. Married patients had better physical and mental composite scores but with no significant difference except in sexual function and emotional well being.

Interventions for reducing difficulties caused by physical limitations in older patients, higher level of psychological support for patients with late onset disease and social support for those living alone are important factors in improving HRQOL in MS patients.

REFERENCES

1. Yalachkov, Y., Soydaş, D., Bergmann, J., et al. Determinants of quality of life in relapsing-remitting and progressive multiple sclerosis. Mult Scler Relat Disord. 2019; 30: 55.
2. Hermann, B., Vickrey, B., Hays, R., et al. A comparison of health-related quality of life in patients with epilepsy, diabetes and multiple sclerosis. Epilepsia Res 1996; 25: 113-118.
3. Noble, J.G., Osborne, L.A., Jones, K.H., Middleton, R.M., Ford, D.V. Commentary on disability outcome measures in multiple sclerosis clinical trials. Mult Scler. 2012; 18(12): 1718–1722.
4. Gil-González, I., Martín-Rodríguez, A., Conrad, R., Pérez-San-Gregorio, M.A. Quality of life in adults with multiple sclerosis: a systematic review. BMJ Open 2020; 10: e041249. doi:10.1136/bmjopen-2020-041249.
5. Wallin, M., Culepper, P., Coffman, P., Pulaski, S., Maloni, H., Mahan, C., et al. The Gulf War era multiple sclerosis cohort: age and incidence rates by race, sex and service. Brain. 2012; 135: 1778–1785.
6. Harbo, H.F., Gold, R., Tintoré, M. Sex and gender issues in multiple sclerosis. Ther Adv Neurol Disord. 2013; 6(4): 237-248. doi:10.1177/1756286135488434.
7. Bergamaschi, R. Prognostic factors in multiple sclerosis. Int Rev Neurobiol. 2007; 79: 423-447.
8. Zhao, L., Han, G., Zhao, Y., Jin, Y., Ge, T., Yang, W., Cui, R., Xu, S. and Li, B. Gender Differences in Depression: Evidence From Ge-

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9. Wang P, Li B, Fan J, Zhang K, Yang W, Ren B, et al. Additive antidepressant-like effects of fasting with β-estradiol in mice. J Cell Mol Med. 2019; 23: 5508–5517. doi: 10.1111/jcmm.14454.

10. Calandrè E, Graziano F, Borghi M, et al. Depression, positive and negative affect, optimism and health-related quality of life in recently diagnosed multiple sclerosis patients: the role of identity, sense of coherence, and self-efficacy. J Happiness Stud. 2018; 19: 277–295. doi: 10.1007/s10902-016-9818-x.

11. Redelings MD, McCoy L, Sorvillo F. Multiple sclerosis mortality and patterns of comorbidity in the United States from 1990 to 2001. Neuroepidemiology. 2006; 26: 102–112.

12. Kingwell E, Zhu F, Marrie RA, et al. High incidence and increasing prevalence of multiple sclerosis in British Columbia, Canada: Findings from over two decades (1991–2010). J Neurol. 2015; 262(10): 2352–2365.

13. Marrie RA, Yu N, Blanchard J, et al. The rising prevalence and changing age distribution of multiple sclerosis in Manitoba. Neurology. 2010; 74(6): 465–471.

14. Sanai SS, Saini V, Benedict RHB, Zivadinov R, Teter BE, Ramanathan M, Weinstock-Guttman B. Aging and multiple sclerosis. Multiple Sclerosis Journal. 2016; 22(6): 717–725. doi: 10.1177/ 135248581664871.

15. Sheridan CL, Radmacher SA. Significance of psychosocial factors to health and disease. In: LA. Schein, HS. Bernard, HI. Spitz, PR. Muskin (Eds.), Psychosocial treatment for medical conditions: Principles and techniques 2003; 3–25. Brunner-Routledge, 2005.

16. Rosik K, Zagożdżon R. Quality of life and social support in patients with multiple sclerosis. Psychiatr Pol. 2017; 51(5): 923–935. doi: https://doi.org/10.1177/135248581664871.

17. Lessan-Pezeshki M, Rostami Z. Contributing factors in health-related quality of life assessment of ESRD patients: a single center study. Int J Nephrol Urol. 2009; 1: 12918-12936.

18. Prazeres F, Figueiredo D. Measuring quality of life of old type 2 diabetic patients in primary care in Portugal: a cross-sectional study. J Diabetes Metab Disord. 2014; 13: 68.

19. Baumberst-Barrak R, Simeoni MG, Reuter F, Klement I, Aghababian V, Pelletier J, Auquier P. Cognitive function and quality of life in multiple sclerosis patients: a cross-sectional study. BMC Neurol. 2011 Feb 2; 11: 17. doi: 10.1186/1471-2377-11-17.

20. Baumberst K, Boyer L, Boucekine M, Michel P, Pelletier J, Auquier P. Measuring the Quality of Life in patients with multiple sclerosis in clinical practice: a necessary challenge. Mult Scler Int. 2013; 2015: 524894.

21. Vickrey BG, Hays RD, Harooni R, Myers LW, Ellison GW. A health-related quality of life measure for multiple sclerosis. Qual Life Res. 1995; 4: 187–206.

22. Hajrić S, Alajbegović A, Subašić N, Imamović D, Nakicević N. Quality of life in multiple sclerosis; relation to the clinical parameters of the disease. Med Arh. 2008; 62: 142–145.

23. Rahimian Boogar I, Talepasand S, Jabari M. Psychosocial and Medical Determinants of Health-related Quality of Life in Patients with Relapsing-Remitting Multiple Sclerosis. Arch Neuropsychiatry. 2018; 55: 29–35. https://doi.org/10.29399/npa.16985.

24. Brola W, Sobolewski P, Fudala M, Flaga S, JantarSKI K. Multiple sclerosis: patient-reported quality of life in the Świętokrzyskie Region. Medical Studies/Studia Medyczne. 2017; 35(3): 191–198.

25. Albuquerque C, Geraldo A, Martinsa R, Ribeiroa O. Quality of life of people with multiple sclerosis: Clinical and psychosocial determinants. Procedia–Social and Behavioral Sciences; 171 2015; 359-3 65.

26. Buhse M, Banker WM, Clement LM. Factors Associated with Health-Related Quality of Life Among Older People with Multiple Sclerosis. Int J MS Care. 2014; 16: 10–19.

27. Cichy K, Bishop, M, Roessler R, Li J, Rumrill P. Non-Vocational Health-Related Correlates of Quality of Life for Older Adults Living with Multiple Sclerosis. Journal of Rehabilitation 2016; 82: 36.

28. Rezapour A, Almasian Kia A, Goodarzi S, Hosami M, Nouraei Motlagh S, Vahedi S. The impact of disease characteristics on multiple sclerosis patients’ quality of life. Epidemiol Health. 2017; 39:e2017008. doi: 10.4178/epih.e2017008.

29. Ashjazadeh N, Hadianfard H, Feridoni S, et al. Assessment of health-related quality of life in patients with multiple sclerosis living in the Fars Province of Iran. Neuroimunmodul Neuroinflamm. 2016; 5: 57–62.

30. Kaya-Aygunoglu S, Celebi A, Vardar N, Gursoy E. Correlation of Fatigue with Depression, Disability Level and Quality of Life in Patients with Multiple Sclerosis. Noro Psikiyat Ars. 2015; 52: 247–51.

31. Nascimento MG, Kosminsky M, Chi M. Gender role in pain perception and expression: an integrative review. BrJNP. São Paulo. 2020; 3(1): 58-62.

32. Pool GJ, Schwegler AF, Theodore BR, Fuchs PN. Role of gender norms and group identification on hypothetical and experimental pain tolerance. Pain. 2007; 129(1-2): 122-129.

33. Bartley EJ, Fillingim RB. Sex differences in pain: a brief review of clinical and experimental findings. Br J Anaesth. 2015; 111(1): 52-58.

34. Racine M, Tousignant-Lalffame Y, Kloda LA, Dion D, Dupuis G, Choinière M. A systematic literature review of 10 years of research on sex/gender and pain perception - part 2: do biopsychosocial factors alter pain sensitivity differently in women and men? Pain. 2012; 155: 619–655.

35. Niesters M, Dahan A, Kest B, et al. Do sex differences exist in opioid analgesia? A systematic review and meta-analysis of human experimental and clinical studies. Pain. 2010; 151: 61–68.

36. Brola W, Sobolewski P, Fudala M, et al. Self-Reported quality of life in multiple sclerosis patients: preliminary results based on the Polish MS registry. Patient Prefer Adherence. 2016; 10: 1647–1656.

37. Kes VB, Cengić L, Cesarić M, Tomas AJ, Zavoreo I, Matovina LZ, Corić L, Drnasin S, Demarin V. Quality of life in patients with multiple sclerosis. Acta Clin Croat. 2015; 52: 107–111.

38. Hadgkiss EJ, Jelinek GA, Weiland TJ, Pereira NG, Marck CH, van der Meer DM. Methodology of an International Study of People with Multiple Sclerosis Recruited through Web 2.0 Platforms: Demographics, Lifestyle, and Disease Characteristics. Neurol Res Int. 2015; 580956.

39. Sahelpoor G, Hosseininezhad M, Rezaei S. A preliminary path analysis: effect of psychopathological symptoms, mental and physical dysfunctions related to quality of life and body mass index on fatigue severity of Iranian patients with multiple sclerosis. Iran J Neurol. 2012; 11: 96-105.
40. Papuć E, Stelmasiak Z. Factors predicting quality of life in a group of Polish subjects with multiple sclerosis: accounting for functional state, sociodemographic and clinical factors. Clin Neurol Neurosurg. 2012; 114: 341–346.

41. Pashazadeh Kan F, Hoseinipalangi Z, Ahmadi N, Hosseinifard H, Dehnad A, Sadat Hoseini B, Tohidi Asl M, Ghashghaee A. Global, regional and national quality of life in patients with multiple sclerosis: a global systematic review and meta-analysis. BMJ Support Palliat Care. 2020 Sep 22:bmjspcare-2020-002604. doi: 10.1136/bmjspcare-2020-002604.

42. Calandri E, Graziano F, Borghi M, et al. Coping strategies and adjustment to multiple sclerosis among recently diagnosed patients: the mediating role of sense of coherence. Clin Rehabil. 2017; 31: 1386–1395.

43. Minden SL, Frankel D, Hadden LS, et al. Disability in elderly people with multiple sclerosis: an analysis of baseline data from the Sonya Slifka longitudinal multiple sclerosis study. NeuroRehabilitation. 2004; 19: 55-67.

44. Garg H, Bush S, Gappmaier E. Associations between fatigue and disability, functional mobility, depression, and quality of life in people with multiple sclerosis. Int J MS Care. 2016; 18: 71–77.

45. Nazari F, Shaygannejad V, Mohammadi Sichani M, Mansourian M, Hajhashemi V. Evaluating the usefulness of treatment requires a direct measurement of the health-related Quality of life among patients with multiple sclerosis and voiding dysfunction: a cross-sectional study. BMC Urology. 2020; 62: 20. https://doi.org/10.1186/s12894-020-00590-w.

46. Turpin KVL, Carroll LJ, Cassidy JD, et al. Deterioration in the health-related quality of life of persons with multiple sclerosis: the possible warning signs. Mult Scler. 2007;13: 1038–1045.

47. Costa DC, Sá MJ, Calheiros JM. Social support network and quality of life in multiple sclerosis patients. Arq Neuropsiquiatr. 2017; 75: 267–271.

48. Mikula P, Nagyova I, Krokavcova M, et al. Social participation and health-related quality of life in people with multiple sclerosis. Disabil Health J. 2015; 8: 29–34.

49. Gedik Z, Idiman E. Health-related quality of life in multiple sclerosis: Links to mental health, self-esteem, and self-compassion. The Journal of Psychiatry and Neurological Sciences. 2020; 53: 59-70. doi: 10.14744/DAJPNS.2019.00061.