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ORIGINAL ARTICLE

Relationship Between Quality of Life and Dysarthria in Patients With Multiple Sclerosis

Valentina Piacentini, SLP,[a] Ilaria Mauri, SLP,[a] Davide Cattaneo, PhD,[a] Marco Gilardone, MD,[b] Angelo Montesano, MD,[a] Antonio Schindler, MD[c]

From the [a]IRCCS Santa Maria Nascente, Fondazione Don Gnocchi ONLUS, Milan; [b]Department of Rehabilitation Medicine, Casa di Cura Privata del Policlinico, Milan; and [c]Department of Biomedical and Clinical Sciences "L. Sacco", Università degli Studi di Milano, Milan, Italy.

Abstract

Objective: To evaluate dysarthria and dysarthria-related quality of life (QOL) and analyze its relations with duration of disease, severity, and general QOL in patients with multiple sclerosis (MS).

Design: Cross-sectional observational study.

Setting: Rehabilitation center.

Participants: Consecutive patients with MS (N = 163) were recruited (mean age, 52±10.4y; mean MS duration, 19±10.4y).

Interventions: Not applicable.

Main Outcome Measures: Presence of dysarthria; dysarthria characteristics; MS severity and duration; and dysarthria-related and generic QOL were evaluated by means of the therapy outcome measure scale; Robertson profile; Expanded Disability Status Scale (EDSS), years of disease; QOL of the dysarthric speaker questionnaire; and Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36), respectively.

Results: The mean EDSS score was 6.5±1.3. Dysarthria affected 57 (35%) of the 163 patients. Dysarthria severity was mild in most of the 57 patients with dysarthria. Median Robertson profile scores were slightly but significantly higher in the nondysarthric group compared with the dysarthric group ($P = .001$). The QOL for the dysarthric speaker questionnaire was significantly more compromised in patients with dysarthria ($P = .001$). No difference on the SF-36 scores between patients with and without dysarthria was found, with the exception of the physical activity and physical pain subscales. The QOL for the dysarthric speaker questionnaire showed no correlation with MS duration and a weak correlation with EDSS score ($r = .25$). Correlations between the SF-36 and QOL for the dysarthric speaker scores were few and weak, with the exception of the role limitations because of emotions ($r = -.428$) and mental health subscales ($r = -.383$).

Conclusions: Dysarthria-related QOL is compromised in patients with MS and dysarthria and might be used as a supplementary measure in clinical practice and research for patients who have MS.

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Multiple sclerosis (MS) is one of the most common chronic neurologic diseases in young adults. Dysarthria affects approximately 40% to 50% of individuals with MS and is the most common communication disorder[1-4] in this population. Dysarthria is a speech disorder resulting from disturbances in muscular control of the speech mechanism caused by damage to the central or peripheral nervous system.[5] Speed, strength, range, timing, and accuracy of speech movements involved in speech processes of respiration, phonation, articulation, and prosody are affected. The characteristics of dysarthria in patients with MS are determined by the sites of central nervous system damage; while dysarthria was initially attributed mainly to brainstem involvement,[6] cerebral or cerebellar lesions are now considered common sites of speech disturbances in patients with MS.[7] Dysarthria is uncommon in the initial stages of MS and tends to occur as a later manifestation in the course of the disease, presumably because of increasing involvement of the motor system. Dysarthria associated with MS is predominantly mild, with the degree of severity progressively increasing with greater neurologic involvement.[1,8]

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Dysarthria characteristics in patients with MS have been analyzed previously by several authors.[1,3,9-11] Impairments in all subsystems of the speech mechanism, except for jaw function, have been found. In particular, tongue and laryngeal function have been noted to be among the most impaired subsystems. Perceptually, 5 abnormal speech features have been identified as common in MS dysarthria: harshness, imprecise articulation and consonant production, impaired emphasis and stress patterns, impaired respiratory support, and impaired pitch variation and control. Among these, imprecise articulation and consonant production were the most frequently perceived impairments. All of the elements contribute to the reduction in word intelligibility, rate of speech, and communication efficiency,[3,12] often resulting in frustration, misunderstanding, and participation restriction in ongoing communication.[13] Recently, the variables associated with communicative participation in patients with MS have been investigated. Fatigue and slurred speech were the variables showing the strongest association with communicative participation, along with depression, problem thinking, employment status, and social support. All of the elements accounted for 48.7% of the variance in communication participation, suggesting that communicative participation is associated with multiple variables.[14]

MS is associated with a decreased quality of life (QOL).[15] QOL is starting to be used as a major outcome measure for assessing health, evaluating treatment, and managing care.[16] The application of generic QOL questionnaires, such as the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36), showed that activities of daily living, vitality, and physical activity are the most affected dimensions in patients with MS.[15,16] Because none of the SF-36 items investigate speech or communication, data on these aspects of activity and participation are not available. Also, it is not known whether QOL instruments commonly applied to patients with MS indirectly address the burden of dysarthria. Previous investigations have focused on how patients with MS with dysarthria experience their condition; however, the dysarthria-related QOL construct has not been directly investigated with instruments that have known and adequate psychometric properties. In 2002, Klugman and Ross[17] studied 30 patients with MS, 17 of whom presented with dysarthria through a self-assessment questionnaire. Speech accounted for 30.8% of the reported emotional distress, 30.8% of loneliness and isolation, and 38.5% of limitations in communication with family and friends. Even though the impact of dysarthria on QOL was analyzed in that study, dysarthria-related QOL was not the object of the investigation. In particular, no data were reported on how patients perceive their own speech, the difficulties they encounter in daily living activities, their ability to adjust to their new condition, and other people's reactions. In 2008,[13] 55 patients with dysarthria, 26 of whom were diagnosed with MS, completed a dysarthria self-report questionnaire. Prominent problems were related to restrictions in communicative participation. Communication was also affected by emotions and the number and familiarity of people present in communicative encounters. That study considered the impact of dysarthria on communication and analyzed participation restriction and strategies implemented by patients to increase communicative function. However, the self-report questionnaire in that study analyzed the impact of different domains (eg, language, cognition, fatigue) on communication and was not psychometrically validated.

QOL measures are important because clinician and patient perspectives often differ and these measures assess the impact of a disease in a daily living setting. Furthermore, clinicians can use QOL assessment to evaluate whether interventions have been effective and determine whether further actions are required. Finally, generic and specific QOL measures may serve to alert clinicians to areas that would otherwise be overlooked.[18,19] In particular, dysarthria-related QOL tools may provide information on the burden of dysarthria in daily life. This kind of information is not captured by generic QOL tools (eg, SF-36). Although the characteristics of dysarthria and its burden in patients with MS have been the object of previous studies,[3,7] to our knowledge, its impact on QOL has not been investigated previously with instruments that have known and adequate psychometric properties. Evaluating dysarthria-related QOL is important because traditional measures of speech impairment do not allow an understanding of their consequences on QOL. Besides, knowledge of dysarthria-related QOL may help in prioritizing treatments. In fact, traditional rehabilitation approaches to dysarthria focus on speech impairment and intelligibility, whereas other areas (eg, adoption of compensatory strategies) may become aims of rehabilitation intervention.

The aims of this study were to (1) assess dysarthria characteristics and prevalence and QOL and dysarthria-related QOL in patients with MS; (2) analyze relations between MS duration, dysarthria severity, and dysarthria-related QOL; (3) investigate whether general QOL instruments present different scores in patients with MS with and without dysarthria; and (4) analyze relations between dysarthria-related QOL and general QOL. We hypothesized that (1) dysarthria would be highly prevalent and that both generic and dysarthria-related QOL would be compromised in patients with MS; (2) dysarthria-related QOL would be more adversely impacted with increasing disease duration and severity and with greater dysarthria severity; (3) general QOL instruments would not present different scores in patients with MS with and without dysarthria; and (4) dysarthria-related QOL would be related to general QOL.

List of abbreviations:

CI	**confidence interval**
EDSS	**Expanded Disability Status Scale**
ICC	**intraclass correlation coefficient**
MMSE	**Mini-Mental State Examination**
MS	**multiple sclerosis**
QOL	**quality of life**
SF-36	**Medical Outcomes Study 36-Item Short-Form Health Survey**
TOM	**therapy outcome measure**

Methods

This observational, exploratory cross-sectional study was carried out according to the Declaration of Helsinki and approved by the Institutional Review Board of IRCCS Santa Maria Nascente, Fondazione Don Gnocchi ONLUS (Milan, Italy). Each patient included in the study gave written informed consent. All 163 patients were evaluated with the Robertson profile, therapy outcome measure (TOM) scale, and Expanded Disability Status Scale (EDSS). They also completed both the QOL for the dysarthric speaker and SF-36 questionnaires.

Participants

Recruited participants for the study included 173 consecutive patients with a diagnosis of MS, according to McDonald criteria,[20] who were attending the MS Rehabilitation Unit at IRCCS Santa Maria Nascente, Fondazione Don Gnocchi ONLUS (Milan, Italy)