



## The burden of non-motor symptoms in Parkinson's disease using a self-completed non-motor questionnaire: A simple grading system



K. Ray Chaudhuri <sup>a, b, c</sup>, A. Sauerbier <sup>a</sup>, J.M. Rojo <sup>d</sup>, K. Sethi <sup>e</sup>, A.H.V. Schapira <sup>f</sup>,  
R.G. Brown <sup>b, g</sup>, A. Antonini <sup>h</sup>, F. Stocchi <sup>i</sup>, P. Odin <sup>j</sup>, K. Bhattacharya <sup>k</sup>, Y. Tsuboi <sup>l</sup>, K. Abe <sup>m</sup>,  
A. Rizos <sup>a</sup>, Carmen Rodriguez-Blazquez <sup>n</sup>, P. Martinez-Martin <sup>n, \*</sup>

<sup>a</sup> National Parkinson Foundation International Centre of Excellence, King's College London, London, UK

<sup>b</sup> National Institute for Health Research (NIHR) Mental Health Biomedical Research Centre and Dementia Unit at South London and Maudsley NHS Foundation Trust and King's College London, UK

<sup>c</sup> Department of Clinical Neuroscience, Institute of Psychiatry, Kings College London, London, UK

<sup>d</sup> Department of Statistics, Centre of Human and Social Sciences, Spanish Council for Scientific Research, Madrid, Spain

<sup>e</sup> Movement Disorders Program, Medical College of Georgia, Augusta, GA, USA

<sup>f</sup> UCL Institute of Neurology, Department of Clinical Neurosciences London, London, UK

<sup>g</sup> Department of Psychology, Institute of Psychiatry, Kings College London, London, UK

<sup>h</sup> Department for Parkinson's Disease, IRCCS San Camillo, Venice, Italy

<sup>i</sup> Department of Neurology, IRCCS San Raffaele, Rome, Italy

<sup>j</sup> University of Lund, Lund, Sweden

<sup>k</sup> Bangur Institute of Neurology, Kolkata, India

<sup>l</sup> Department of Neurology, Faculty of Medicine, Fukuoka University, Fukuoka, Japan

<sup>m</sup> Department of Community Health Medicine, Hyogo College of Medicine Division of Neurology, Hyogo College of Medicine Hospital, Japan

<sup>n</sup> National Centre of Epidemiology and Centre for Networked Biomedical Research on Neurodegenerative Diseases (CIBERNED), Carlos III Institute of Health, Madrid, Spain

### ARTICLE INFO

#### Article history:

Received 25 May 2014

Received in revised form

31 October 2014

Accepted 7 December 2014

#### Keywords:

Parkinson's disease  
Non-motor symptoms  
NMS Questionnaire  
Classification  
Grading  
Prevalence

### ABSTRACT

**Background:** Non-motor symptoms (NMS) of Parkinson's disease (PD) affect virtually every patient, yet they are under-recognized and under-treated. The NMS Questionnaire (NMSQuest) is a validated 30-item self-assessment instrument useful for NMS screening in clinic.

**Objective:** Development of a straight forward grading classification of the burden of non-motor symptoms in PD based on the number of NMS as assessed by the NMS Questionnaire.

**Methods:** In an observational, cross-sectional, international study of 383 consecutive patients distribution of the declared NMS as per NMSQuest was analyzed according to previously published levels based on the Non-Motor Symptoms Scale and also the median and interquartile range (IR, percentiles 25 and 75) of the total NMSQuest scores. After post hoc checking, these values were proposed as cut-off points for estimating NMS burden based only on the accumulation of symptoms.

**Results:** Burden and number of NMS correlate closely ( $r \geq 0.80$ ). On the basis of this finding, five levels (0 = No NMS to 4 = Very severe) of NMSQuest grading were proposed after identification of their cut-offs by ordinal logistic regression and median and interquartile range distribution. These values coincided almost completely with those obtained by median and interquartile range in an independent sample. Concordance between this classification and HY staging was weak (weighted kappa = 0.30), but was substantial (weighted kappa = 0.68) with the Non-Motor Symptoms Scale grading.

**Conclusion:** Completion of NMSQuest and subsequent grading of the burden could allow the health care professional to approach the severity of NMS burden using the self completed NMSQuest in a primary care setting.

© 2015 Elsevier Ltd. All rights reserved.

\* Corresponding author. National Center of Epidemiology, Carlos III Institute of Health, Avda. Monforte de Lemos, 5, 28029 Madrid, Spain. Fax: +34 913877815.  
E-mail address: [pmartinez@isciii.es](mailto:pmartinez@isciii.es) (P. Martinez-Martin).

## 1. Introduction

Parkinson's disease (PD), the second most common neurodegenerative disorder, is typically characterized by its motor symptoms, namely rigidity, resting tremor, bradykinesia and postural instability. However, non-motor symptoms (NMS) are integral to PD and are the leading cause of poor quality of life for both people with PD and their caregivers. NMS are prevalent in over 90% of people with PD from untreated stage to advanced [1–5]. In a survey by the leading UK Parkinson's charity, Parkinson's UK, members rated symptoms such as sleep disturbance, pain, constipation, urinary problems and dizziness to be as debilitating as and possibly more intrusive than their motor symptoms [6,7]. Although the impact of NMS on the lives of people with Parkinson's is often devastating, a Parkinson's UK national audit carried out in 2011, reported that NMS are being recorded in less than 40% of clinical consultations [8]. The treatment consequence of this “unmet need” is highlighted in an international survey in 2010 which showed that in up to 62% of cases, NMS of PD such as apathy, pain, sexual difficulties, bowel incontinence, and sleep disorders may remain undeclared to the health care professionals as the patients are either embarrassed or unaware that the symptoms are linked to PD [9].

The NMS Questionnaire (NMSQuest) [10] is a 30 item self-assessment instrument that screens for NMS in clinics and is recommended by many learned societies and patient groups [11]. It covers nine NMS domains completed in the “yes” and “no” fashion and the prevalence of NMS can be addressed using the total of “yes” scores. An additional advantage is that the NMSQuest may be completed while patients are waiting to be seen and so does not compromise consultation time [10].

In this article we propose how the NMSQuest can be used to provide a simple NMS grading system based on the number of perceived NMS, from grade 0 (no NMS) to grade 4 (very severe non-motor load) that can help to interpret the patients's health in a holistic manner, and not simply addressing motor assessment with potential utility in primary and secondary care. A similar grading system has already been described using the quantitative NMS Scale (NMSS) but the need for clinician assessment means this instrument is most useful for research assessments [12]. Details of NMSQuest and NMSS use have been extensively discussed in the literature [11,13].

## 2. Methods

### 2.1. Hypothesis

In PD, we hypothesize that there is a close relationship between number and burden of NMS.

### 2.2. Objective

To obtain a basic global gradation of the PD non-motor state from the number of NMS detected through the NMSQuest.

### 2.3. Design

This was an observational, cross-sectional, international study.

### 2.4. Patients

For testing the hypothesis, data from the PD patients database ( $n = 951$ ) of the previous study on NMS gradation based on the NMSS [12] and also from the present study were used.

As the objective of the current study, 383 consecutive PD patients from movement disorders departments participating in the first validation study of the NMS scale [14] and also an ongoing naturalistic study of NMS in PD (NILS: UKCRN No 10084) were included. In both studies, inclusion criteria were PD diagnosed according to international recognized diagnostic criteria [15], and exclusion criteria were Parkinsonism different to PD, disorders that interfere or impede assessment of PD, inability to understand local language, and inability to provide informed consent. Dementia, based on clinical judgment, was a specific exclusion criterion.

Databases were built and secured in the National Center for Epidemiology, Carlos III Institute of Health, Madrid. Data were collected from 2007 to 2011.

### 2.5. Setting and locations

Departments of Neurology and Movement Disorder Units from eleven collaborating centres in Europe, Japan, Israel, and USA.

### 2.6. Ethical aspects

The non-motor scale studies received ethical approval from relevant institutions as previously described [12,14]. The longitudinal NMS natural history study has been approved in all relevant institutions and is included in UK Department of Health portfolio of approved studies. All patients signed their informed consent before inclusion.

### 2.7. Assessments

Socio-demographic and historical data were collected from patients, who were asked to complete the NMSQuest. Those with fluctuations were assessed and responded to the NMSQuest in ‘on’ state. When sensory or motor problems interfered with the patient completing the questionnaire, assistance was provided by a family member or caregiver. Motor examination and motor complications (dyskinesias and fluctuations) were assessed with the corresponding sections of the Unified Parkinson's Disease Rating Scale (UPDRS, Sections Motor examination and Complications [items 32 to 39]) [16] or the almost equivalent Scale for Outcomes in PD-Motor (SCOPA-Motor, Sections Motor evaluation and Motor complications) (correlation coefficients between both,  $\geq 0.90$ ) [17,18]. Scores from both scales were standardized to percentage on the maximum possible score and used as “motor impairment” and “motor complications” scores in the study. The Non-Motor Symptoms Scale (NMSS) is composed of 30 items grouped in nine domains. Each item scores on a multiple of severity (from 0 to 3) and frequency scores (from 1 to 4). The theoretical range of the NMSS total score is from 0 to 360 [14,19].

The Hoehn and Yahr (HY) classification, to establish the staging of PD. The original 5-stage HY scale was used in this study [20].

The Parkinson's Disease Questionnaire–8 items (PDQ-8) is a specific health related quality of life (HRQoL) instrument for PD. Each item scores from 0 to 4 and the PDQ-8 Summary Index (PDQ-8 SI) is expressed as percentage of the sum of the item scores on 32, the maximum possible scale score [21]. The PDQ-8 is “recommended” for use in PD patients [22].

The Hospital Anxiety and Depression Scale (HADS) [23] is a self-administered instrument with 14 items (7 for assessment of anxiety, HADS-Anx, and 7 for assessment of depression, HADS-Dep) scoring from 0 (no problem) to 3 (extreme problem). For each subscale, scores of 11 points or higher are indicative of mood disturbance (anxiety or depression). The HADS has been found to be satisfactory or acceptable for use in PD [24,25].

### 2.8. Data analysis

Descriptive statistics were applied to settle the characteristics of the present study cohort. Main variables in the study showed a non-normal distribution (Kolmogorov–Smirnov test). For testing the main hypothesis, the Spearman rank correlation coefficient between number of NMS and total score of the NMSS was determined for data from the previous study [12] and the present one.

The burden levels of NMS defined for the NMSS (0 = no NMS; 1–20 = mild; 21–40 = moderate; 41–70 = severe;  $\geq 71$  = very severe) [12] served as an anchor to graduate the importance of the NMS load. An ordinal logistic regression model was built with the ordinal NMSS levels classification as dependent variable and the number of NMS (NMSQuest score) as independent variable. This technique allows calculating the probability curves for each degree of burden and the cut-off points between these curves.

In addition, the median and interquartile range (IR, percentiles 25% and 75%) of the total NMSQuest scores were calculated to check how this proportional distribution of the sample would adjust to the anchor values determined by the ordinal logistic regression.

Finally, to check the validity of the obtained classification, a post hoc analyses was carried out by determining the NMSQuest score distribution (median and IR) in an independent sample of 634 PD patients from other studies. The hypothesis was that distribution of scores in this independent sample would overlap that of the present study, favoring this way the generalizability of the results.

Additional analyses were carried out to determine the relationships between the proposed severity levels based on the load of NMS and the other variables in the study. The Kruskal–Wallis test was applied to comparisons and the Spearman rank correlation coefficient ( $r_s$ ) was used to determine associations. Correlation values 0.30–0.59 were deemed moderate [26]. The Goodman and Kruskal's gamma test was applied to analyze the difference in proportion of patients between the NMSQuest gradation and the HY staging classification. Agreement between classifications was explored using weighted kappa with quadratic weights.

Statistical analyses were performed with Stata 13.1 (StataCorp, College Station, Texas).

Download English Version:

<https://daneshyari.com/en/article/10744922>

Download Persian Version:

<https://daneshyari.com/article/10744922>

[Daneshyari.com](https://daneshyari.com)