

5. Comprehensive non-motor symptoms assessments

There are two instruments available for assessing a wide variety of non-motor symptoms (NMS) that may be present in Parkinson's disease (PD). One is completed by the patient, and the other by the clinician. Once identified, some NMS may be assessed in more detail with specific scales, such as those described in Chapter 6.

Non-Motor Symptoms Questionnaire (NMS-Quest) (Figure 5.1) [1]	
Description of scale	
Overview	<p>It is a screening questionnaire revealing the range of NMS in PD [2]</p> <p>The NMS-Quest is a self-completed questionnaire featuring responses as 'yes' and 'no' to each item. It is composed of 30 items grouped into 9 domains:</p> <p>I, Digestive (7 items);</p> <p>II, Urinary tract (2 items);</p> <p>III, Apathy/Attention/Memory (3 items); IV, Hallucinations/Delusions (2 items);</p> <p>V, Depression/Anxiety (2 items); VI, Sexual function (2 items);</p> <p>VII, Cardiovascular (2 items);</p> <p>VIII, Sleep disorders (5 items);</p> <p>IX, Miscellaneous (pain, weight change, swelling, seating, diplopia) (5 items) [2]</p> <p>Time frame: previous month</p> <p>Time for administration: 5-7 minutes</p> <p>The screening questionnaire is filled out by the patient/caregiver while waiting to be seen in the clinic. It is used specifically to identify NMS in PD</p>
Copyright?	The Movement Disorder Society (MDS). (www.movementdisorders.org/publications/rating_scales/)
How can the scale be obtained?	The scale can be obtained from the original publication [2]
Clinimetric properties of scale in patients with PD	
Feasibility	<p>Specifically designed for patients with PD</p> <p>Used in all stages of PD to identify whether the patient has any NMS [1]</p> <p>Vocabulary avoiding medical jargon and adapted to a seventh-grade level</p> <p>Designed to be applicable to patients with PD across various levels of disabilities [1,2]</p> <p>Scores (number of declared NMS) significantly increase with disease duration and Hoehn & Yahr Staging Scale (HY) [1]</p>
Dimensionality	NMS-Quest has nine domains [2]

Acceptability	An almost complete range of scores (0 to 28) with mean values around 10 were observed [1,2]
Reliability	Test-retest and inter-rater: not tested
Validity	Convergent: NMS-Quest score was highly correlated with NMSS (Non-Motor Symptoms Scale) total score and corresponding domains [3,4]. Correlation of total NMS-Quest with HY stage was moderate ($r_s = 0.31$) and a lower correlation was found with disease duration ($r_s < 0.30$) [1,2] Known-groups: total score significantly increased with increased age, disease duration, and severity of disease [1,2] Internal: interdomain correlation was poor to moderate (0.06 to 0.37) [2]
Responsiveness & Interpretability	Not tested
Cross-cultural Adaptations & Others	Translated and validated into many languages
Overall impression	
Advantages	Quick and easy screening tool, usable by the patient/caregiver to flag up NMS; 90% of patients and caregivers felt that the issues raised in the NMS-Quest were relevant to day-to-day life [1]
Disadvantages	It does not assess severity of symptoms or effect of treatment

Non-Motor Symptoms Scale (NMSS) [4]	
Description of scale	
Overview	It is a tool to quantify a wide range of NMS, each one scored for severity and frequency by the physician [5] It is composed of 30 items grouped into 9 domains: I, Cardiovascular (2 items); II, Sleep/Fatigue (4 items); III, Mood/Apathy (6 items); IV, Perceptual problems/Hallucinations (3 items); V, Attention/Memory (3 items); VI, Gastrointestinal tract (3 items); VII, Urinary (3 items); VIII, Sexual function (2 items); and IX, Miscellaneous (4 items) Time frame: Correlationn month Time for administration: 5 to 10 minutes The NMSS is rated by health professionals and obtained through clinical interview. The score for each item is based on a multiple of severity (from 0 to 3) and frequency scores (from 1 to 4)
Copyright?	The MDS (www.movementdisorders.org/publications/rating_scales/)
How can the scale be obtained?	The scale can be obtained from the original publication [4]. [Note: the correct denomination of the domain III is 'Mood/Apathy'] [6]
Clinimetric properties of scale in patients with PD	
Feasibility	Specifically designed for patients with PD [4,6] Used in all stages of PD to identify the severity and frequency of a patient's NMS Designed to be applicable to patients with PD across various levels of disabilities [5]. Scores significantly increase with severity of disease based on HY stages, NMS-Quest, and health-related quality of life assessments [4,6]
Dimensionality	An exploratory factor analysis supported the nine domain structure, explaining 63% of the variance [4]

Acceptability	The overall floor and ceiling effect of the total NMSS score were lower than 1%. Skewness was 1.2. The domains showed variable floor effect [4,6]
Reliability	<p>Cronbach's alpha coefficient ranged from 0.44 to 0.85 and item homogeneity from 0.16 to 0.54</p> <p>The multi-trait scaling reached a success, and probable success rate was higher than 95% for all domains, except the Miscellaneous domain (47% success rate), which contained wide ranging, unrelated questions from diplopia to weight change</p> <p>Most of item-total correlations were higher than the criterion 0.30 (0.10 to 0.73), the lowest values corresponding to the Miscellaneous domain [4,6]</p> <p>With the exception of Cardiovascular and Sexual domains?, test-retest was satisfactory (>0.70) in both validation studies [4,6]</p>
Validity	<p>NMSS total score reached a high correlation with Scales for Outcomes in Parkinson's Disease-Autonomic (SCOPA-AUT) ($r_s = 0.64$), Parkinson's Disease Questionnaire-39 Items (PDQ-39) ($r_s = 0.70$), and EQ-5D Index ($r_s = 0.57$)</p> <p>Correlation with other measures (HY, SCOPA-Motor, SCOPA-Psychiatric complications [SCOPA-PC], SCOPA-Cognition [SCOPA-Cog], Clinical Impression of Severity Index [CISI-PD], PD Sleep Scale, and EQ-5D Visual Analogue Scale [VAS]) was moderate-to-high</p> <p>NMSS domains showed a tight association with other measures for similar constructs: sleep/fatigue with PDSS, perceptual problems/hallucinations with SCOPA-PC, and attention/memory with CISI-PD cognition</p> <p>There were weak correlations between the corresponding domains and other scales for mood and frontal function assessment [4]</p> <p>The correlation with domains of the NMS Questionnaire ranged from 0.44 to 0.74 [4]</p>
Responsiveness & Interpretability	<p>Standard error of measurement (SEM) for the NMSS has been determined and is considered satisfactory ($< \frac{1}{2}$ SD at baseline) [4,6]</p> <p>The scale has been found sensitive to changes induced by advanced therapies [7,8]</p>
Cross-cultural Adaptations & Others	Translated and validated into many languages [5]
Overall impression	
Advantages	Assesses a wide range of NMS that may occur in patients with PD; evaluates NMS that are severe but relatively infrequent and those less severe but persistent; those symptoms that are simultaneously persistent and severe have more relevance in the final score
Disadvantages	Due to its composition, the Miscellaneous domain displays poor clinimetric attributes; there is limited information about the scale's interpretability and responsiveness

Figure 5.1 Non-Motor Symptoms Questionnaire (NMS-Quest)

Name	Date	Age	
Centre ID	Male/Female		
Non-Movement Problems In Parkinson's			
<p>The movement symptoms of Parkinson's disease are well known. However, other problems can sometimes occur as part of the condition or its treatment. It is important that the doctor knows about these, particularly if they are troublesome for you.</p> <p>A range of problems is listed below. Please tick the box 'Yes' if you have experienced it <u>during the past month</u>. The doctor or nurse may ask you some questions to help decide. If you have <u>not</u> experienced the problem in the past month, tick the 'No' box. You should answer 'No' even if you have had the problem in the past but not in the past month.</p>			
Have you experienced any of the following in the last month?		Y	N
1	Dribbling of saliva during the daytime		
2	Loss or change in your ability to taste or smell		
3	Difficulty swallowing food or drink or problems with choking		
4	Vomiting or feelings of sickness (nausea)		
5	Constipation (less than 3 bowel movements a week) or having to strain to pass a stool (faeces)		
6	Bowel (fecal) incontinence		
7	Feeling that your bowel emptying is incomplete after having been to the toilet		
8	A sense of urgency to pass urine makes you rush to the toilet		
9	Getting up regularly at night to pass urine		
10	Unexplained pains (not due to known conditions such as arthritis)		
11	Unexplained change in weight (not due to change in diet)		
12	Problems remembering things that have happened recently or forgetting to do things		
13	Loss of interest in what is happening around you or doing things		
14	Seeing or hearing things that you know or are told are not there		
15	Difficulty concentrating or staying focussed		
16	Feeling sad, 'low' or 'blue'		
17	Feeling anxious, frightened or panicky		
18	Feeling less interested or more interested in sex		
19	Finding it difficult to have sex when you try		
20	Feeling light headed, dizzy or weak standing from sitting or lying		
21	Falling		
22	Finding it difficult to stay awake during activities such as working, driving or eating		
23	Difficulty getting to sleep at night or staying asleep at night		
24	Intense, vivid or frightening dreams		
25	Talking or moving about in your sleep as if you are 'acting' out a dream		
26	Unpleasant sensations in your legs at night or while resting, and a feeling that you need to move		
27	Swelling of your legs		
28	Excessive sweating		
29	Double vision		
30	Believing things are happening to you that other people say are not true		

All the information you supply through this form will be treated with confidence and will only be used for the purpose for which it has been collected. Information supplied will be used for monitoring purposes. Your personal data will be processed and held in accordance with the 1998 Data Protection Act.

Developed and validated by the International PD Non Motor Group

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