



RESEARCH ARTICLE

Generalized assessment of the impact of Parkinson's disease on functional condition [version 1; referees: 2 not approved]

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Abstract

Individuals who develop Parkinson's disease are confronted not only with the physical manifestations of the disorder, but also with the psychosocial issues that impact on quality of life.

The aim of the current work was to assess the level of psychosocial and physical functioning impairment in 95 patients with Parkinson's disease (48 men and 47 women aged 65–79, average age 70.3±0.5, stages of Parkinson's disease according to Hoehn and Yahr scale - 2–2.5). This research was carried out with the help of "Functional Limitation Profile" and "Sickness Impact Profile – 68" tests.

According to the "Functional Limitation Profile" test, the patients with a diagnosis of Parkinson's disease most commonly showed functional condition impairment in 3 categories: "walk" (92% of cases), "social interaction" (85% of cases) and "clarity of mind" (79% of cases). Less frequent condition impairments were changes in the categories "body care and motion" (72% of cases), "emotions" (65% of cases) and "work" (56% of cases). The least impaired were the categories "communication" (22% of cases), "leisure and entertainment" (24% of cases) and "food" (19% of cases). According to the "Sickness Impact Profile – 68" test, patients with Parkinson's disease showed functional condition impairment most often in the categories "mobility control", "social behavior" and "degree of mobility". Patients showed impairment less frequently in the categories "somatic autonomy", "psychic autonomy and communication". The least impaired category was "emotional stability". The highest percent in relation to the maximum possible point was shown in the category "mobility control", and the lowest in the category "emotional stability". Thus, this study demonstrates significant impact of the disease on the functional condition of these patients. Functional limits, connected with the disease appearance, are most often present in the motion and social sphere of patients' life and less frequently in the emotional sphere.

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Referee Status: **XX**

	Invited Referees	
	1	2
version 1 published 03 May 2013	X report	X report
1 Alberto Albanese , IRCCS C Mondino Institute of Neurology Foundation Italy		
2 Iracema Leroi , University of Manchester UK		

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Introduction

Parkinson's disease is a chronic degenerative neurological disorder that adversely affects an individual's motor functioning, which leads to disability, and impacts on their quality of life. Individuals who develop Parkinson's disease are confronted not only with the physical manifestations of the disorder, but with the psychosocial issues that also impact on quality of life. Psychosocial aspects of Parkinson's disease may present as subtle changes with progression of the disease^{1,5}

The purpose of the present research was to assess the level of psycho-social and physical functioning impairment in patients with Parkinson's disease.

Methods

95 patients with Parkinson's disease have been examined (48 men and 47 women aged 65–79, average age 70, 3±0.5). An interview and complete neurologic examination, including the Hoehn and Yahr scale⁶, were performed on the same day. Stages of Parkinson's disease according to Hoehn and Yahr scale were 2–2.5.

Having the aim to assess the impact of the disease on the everyday life of patients to the fullest extent, their interviewing included the use of the tests "Functional Limitation Profile" and "Sickness Impact Profile–68"^{7–15}.

While carrying out "Functional Limitation Profile" test, the change of patient's behavior in cases of Parkinson's disease was assessed in 12 categories of life activity: "walk", "body care and motion", "movement", "household activity", "leisure and entertainment", "social interaction", "emotions", "clarity of mind", "sleep and rest", "food", "communication", "work".

While carrying out "Sickness Impact Profile–68" test, functional condition of patients was assessed in 6 categories of life activity. "Somatic autonomy" category reflected the extent of help that the patient requires when performing everyday activities (dressing, standing, walking, eating etc). "Mobility control" category characterized the degree of control of motion functions, including walking and actions with hands. "Psychic autonomy and communication" category described behavior, connected with mental functions and verbal communication. "Mobility degree" category included the ways the disease limits household and professional activity. "Social Behavior" category reflects social sphere of activity. "Emotional stability" category reflects disease impact on the emotional sphere.

Results

While carrying out "Functional Limitation Profile" test, all patients showed functional conditions changes. Impairments in the category "walk" were present in 87 patients (92% of cases). Most patients noted a slowing down in walking speed (92%), shortening of the distance they could walk without rest (79%) and the need for outside assistance during walking (44%).

Changes in the category "body care and motion" were observed in 69 patients (72% of cases). Impairments of this category were connected with slowing of movements—bradykinesia (85%), patients' reduced ability to maintain balance (72%) and the need for outside assistance (43%).

Limitations in the category "movement" were present in 42 patients (44% of cases) and were manifested in the inability to leave the house (15%) or room (7%), the need for support at a certain time of the day (22%).

In the category "household activity" changes were observed in 40 patients (42% of cases), and consisted of reducing the amount of housework (80%), increasing the time needed for rest (63%), and inability to perform hard work (63%).

In the category "leisure and entertainment" impairments were present in 23 patients (24% of cases). The patients showed decreased period of time spent on leisure (65%) and sports (52%).

Changes in the category "social interaction" were observed in 81 patients (85% of cases). Patients rarely participated in social activities (93%), and isolated themselves from the work team (51%).

Changes in the category "emotion" were noticed in 62 patients (65% of cases). Patients demonstrated depressed mood background (65%), talked about the future with hopelessness (85%).

Impairments in the category "clarity of mind" were noticed in 75 patients (79% of cases). Patients showed impairment of memory (85%) and concentration (85%), slowing of thought processes (80%).

In the category "sleep and rest", patients showed sleepiness in the daytime and insomnia at night (41%) and required additional time for rest because of constant fatigue (80%). Changes in this category were noted in 19 patients (38% of cases).

In the category "food", impairments were observed in 18 patients (19% of cases). The most common impairments included decreased appetite (55%), and need for outside assistance when eating (17%).

Changes in the category "communication" were observed in 21 patients (22% of cases). Patients had problems with writing (93%), and difficulties in communication because of speech dysfunction (85%).

Impairments in the category "work" were present in 53 patients (56% of cases). Some of the patients did not work at all (57%), whilst some performed some of the work at home (19%), or did less work than usual (85%), worked fewer hours (80%) performed only light work (42%), or produced lower-quality work(42%). The frequency of functional limitations is given in [Table 1](#) and [Figure 1](#).

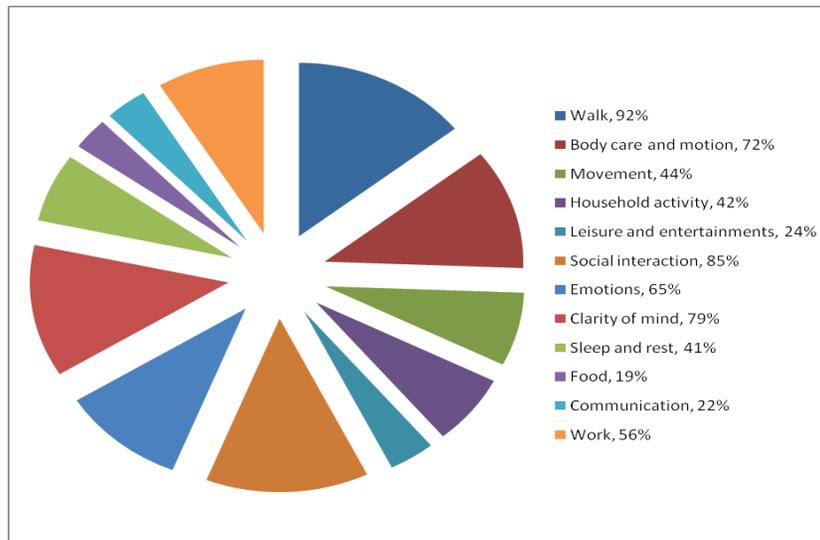


Figure 1 The structure of functional limitations in patients with Parkinson’s disease according to the “Functional Limitation Profile” test data.

Table 1 The frequency of functional limitations cases in patients with acute disseminated encephalomyelitis according to the “Functional Limitation Profile” test data.

Behavior categories	Number of patients	%
Walk	87	92
Social interaction	81	85
Clarity of mind	75	79
Body care and motion	69	72
Emotions	62	65
Work	53	56
Movement	42	44
Household activity	40	42
Sleep and rest	39	41
Leisure and entertainments	23	24
Communication	21	22
Food	18	19

Table 2 The frequency of functional limitation cases in patients with Parkinson’s disease according to “Sickness Impact profile–68” test data.

Behavior categories	Number of patients	%
Social Behavior	82	86
Mobility Control	78	50
Degree of mobility	72	34
Somatic Autonomy	67	71
Psychic autonomy and communication	55	58
Emotional stability	35	37

The frequency of functional limitation cases in patients with Parkinson’s disease according to “Sickness Impact profile–68” test and their assessment in points are given in [Table 2, 3](#) and [Figure 2, 3](#).

Conclusion

The analysis of investigation of patients with Parkinson’s disease (duration 3–5 years) according to the tests “Functional Limitation Profile” and “Sickness Impact Profile–68” showed significant changes of their functional condition connected with the occurrence of the disease.

The patients with Parkinson’s disease according to the test “Functional Limitation Profile” showed functional condition impairment most often in 3 categories: “walk”, “social interaction” and “clarity of mind”, while changes in the categories “body care and motion”, “emotion” and “work” were less frequent. The least impaired were the categories “communication” and “leisure and entertainment”.

The patients with Parkinson’s disease diagnosis according to the test “Sickness Impact Profile–68” showed functional condition impairment most often in the categories “mobility control”, “social behavior” and “degree of mobility”, less frequently in the categories “somatic autonomy” and “psychic autonomy and communication”. The least impaired category was “emotional stability”. The highest percent in relation to the maximum possible point was observed in the category “mobility control”, and the lowest in the category “emotional stability”.

Table 3 Assessment (in points) of disease impact on functional condition of patients according to “Sickness Impact profile–68” test data.

Behavior categories	Average point	Total point	Maximum possible point	% in relation to the maximum possible point
Mobility control	6.6±0.4	278	540	51
Social behavior	5.9±0.4	70	270	26
Psychic autonomy and communication	4±0.3	99	450	22
Degree of mobility	5.3±0.2	189	540	28
Somatic autonomy	3.6±0.2	123	495	25
Emotional stability	2.3±0.5	82	765	11

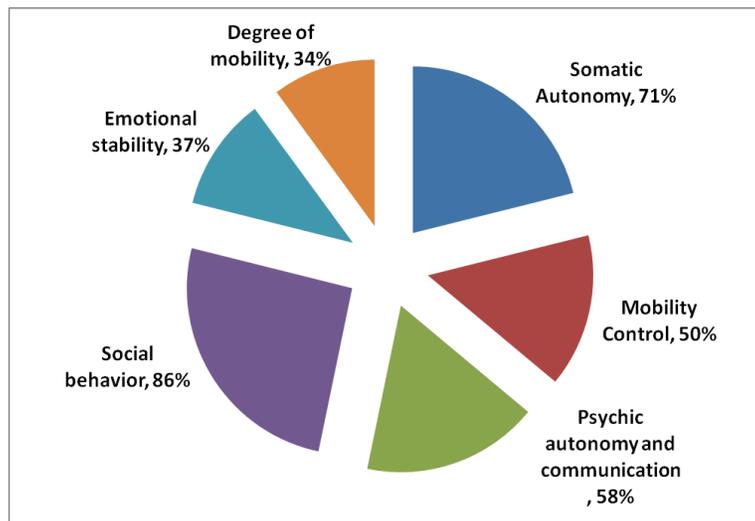


Figure 2 The structure of functional limitations in patients with Parkinson’s disease according to the “Sickness Impact Profile–68” test data.

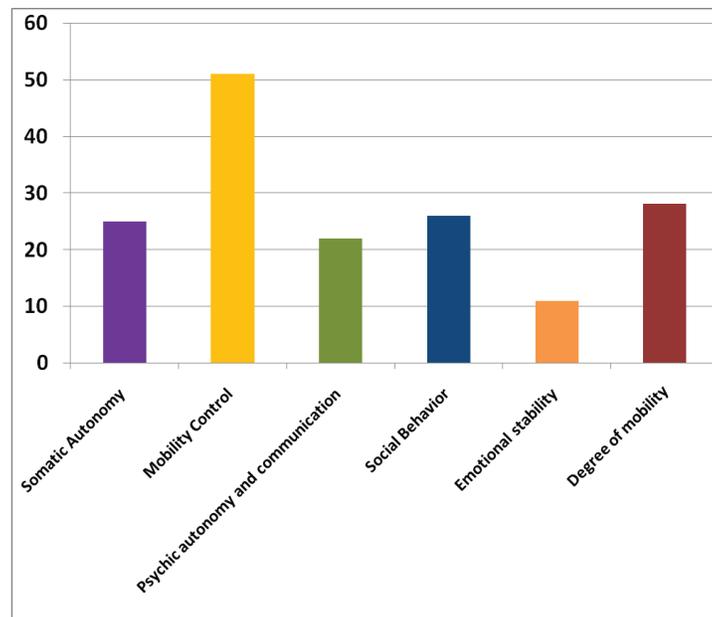


Figure 3 Assessment in points of functional limitations in patients with Parkinson’s disease according to the “Sickness Impact Profile–68” test data (% in relation to the maximum possible point).

Thus, according to the results of two tests, the presence of the disease affects the motion and social sphere of life in the patients with Parkinson's disease the most and their emotional state the least.

For the most accurate assessment of the disease impact on the functional condition of the patients diagnosed with Parkinson's disease, a secondary investigation (depending on the rate of the disease progression) should be carried out. Such investigation of disease dynamics enables detection of possible changes in the categories of life that are most affected by the disease occurrence. Assessment of the quality of life of patients at different stages of the disease with the help of Hoehn and

different stages of the disease with the help of Hoehn and Yahr Scale is a very perspective direction of future studies.

Author contributions

O. Myalovitska and Lobanova conceived the study. Lobanova designed the experiments and carried out the research. All authors prepared the first draft of the manuscript and were involved in the revision of the graft manuscript and have agreed to the final content.

Competing interests

No relevant competing interests were disclosed.

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Version 1

Referee Report 26 September 2013

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Iracema Leroi

Institute of Brain, Behaviour and Mental Health, University of Manchester, Manchester, UK

This is an uncontrolled study using assessments tools that do not appear to have been validated in Parkinson's disease. The description of the methodology, particularly the recruitment and testing procedure, is insufficient. The literature on the topic has not been adequately reviewed. The authors have not included a Discussion of their findings. The analysis is simplistic.

I have read this submission. I believe that I have an appropriate level of expertise to state that I do not consider it to be of an acceptable scientific standard, for reasons outlined above.

Competing Interests: No competing interests were disclosed.

Author Response 16 Oct 2013

Iryna Lobanova, National Medical University, Kiev, Ukraine

The quality of life was assessed using "Functional Limitation Profile" and "Sickness Impact Profile - 68" tests. These allow for assessment of the physical and psychological health of patients and their social functions, as well as global self-assessment of their health. Investigating using this scale does not require a control group of virtually healthy people because the changes assessed by this scale can be observed only among sick people. We used this methodology of generalized quality of life assessment on patients with Parkinson's disease (which is reflected in the introduction to our work).

Competing Interests: No competing interests were disclosed.

Referee Report 13 May 2013

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Alberto Albanese

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The methodology seems to be poor and is insufficiently described. There is no control group.

I have read this submission. I believe that I have an appropriate level of expertise to state that I do not consider it to be of an acceptable scientific standard, for reasons outlined above.

Competing Interests: No competing interests were disclosed.

Author Response 16 Oct 2013

Iryna Lobanova, National Medical University, Kiev, Ukraine

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