

Descriptive study of occupational performance of subjects with Parkinson's disease: the use of ICF as a tool for the classification of activity and participation

Estudo descritivo do desempenho ocupacional do sujeito com doença de Parkinson: o uso da CIF como ferramenta para classificação da atividade e participação

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ABSTRACT

The International Classification of Functionality, Disability, and Health (ICF) is a proposal from the World Health Organization (WHO), which appears as a tool to classify and identify factors that, in addition to the state of health, interfere with the functionality of the subject performing activities. In this cross-sectional study we assess the occupational performance of 46 subjects diagnosed with Parkinson's disease (PD) through the application of the Canadian Occupational Performance Measurement (COPM) and its classification in the areas of ICF. The activities most affected are, Social, Civic, and Community Life (32.6%), Mobility (26.1%), Personal Care (27.1%), Family Life (10.9%), and Learning and Application of Knowledge (8.7%). Information has also been gathered about gender, marital status, type of residence, need for assistance, the Hoehn & Yahr Scale, rigidity profile, postural stability, age and length of illness. This data was not statistically significant ($p < 0.05$). However, in the correlation between

variables studied, the fact that only the rigidity variable showed an average correlation of $r=0,452$ ($p < 0.01$) was obtained through the non-parametric Spearman correlation test, with the five areas classified in the ICF. The results show the importance of promoting and maintaining Community, Social, and Civic Life for subjects with PD and rigidity as an important component of their complaints in relation to occupational performance. The Health Model proposed by the ICF, along with the application of the COPM, were effective, allowing for correlation when the activity is the focus of evaluation, between functions and structures of the body and environmental and personal factors, with the difficulties of performance in carrying out activities.

Keywords: International Classification of Functioning, Disability and Health, Parkinson's Disease, Occupational Therapy, Quality of Life

RESUMO

A Classificação Internacional de Funcionalidade, Incapacidade e Saúde (CIF), é uma proposta da Organização Mundial de Saúde (OMS), que surge como uma ferramenta para classificar e identificar fatores, que além da condição de saúde, estejam interferindo na funcionalidade de sujeitos na realização de atividades. Neste estudo transversal realizou-se a avaliação do desempenho ocupacional de 46 sujeitos diagnosticados com a Doença de Parkinson (DP), através da aplicação da Medida de Desempenho Ocupacional Canadense (MDOC) e classificação das mesmas nos domínios da CIF. Sendo as atividades mais comprometidas a Vida Comunitária, Social e Cívica (32,6%); a Mobilidade (26,1%); o Cuidado Pessoal (27,1%); a Vida Doméstica (10,9%); e, Aprendizagem e Aplicação de Conhecimento (8,7%). Também foram levantadas informações sobre: sexo, estado civil, tipo de residência, necessidade ou não de assistência, Escala de Hoehn & Yahr, perfil de rigidez, estabilidade postural, idade e tempo de doença. Estas não apresentaram significância estatística

($p < 0,05$). Contudo na correlação entre variáveis levantadas, obteve-se, através do teste de correlação não-paramétrico de Spearman, que apenas a variável rigidez apresentou uma correlação média de " $r=0,452$ " ($p < 0,01$) com os cinco domínios classificados na CIF. Os resultados evidenciam a importância da promoção e manutenção da Vida Comunitária, Social e Cívica para sujeitos com DP e a rigidez como componente importante de queixas em relação ao desempenho ocupacional. O Modelo de Saúde proposto pela CIF, em conjunto com a aplicação da MDOC, mostrou-se efetivo, permitindo a correlação quando a atividade é foco de avaliação, entre funções e estruturas do corpo, fatores ambientais e pessoais, com as dificuldades de desempenho na realização das atividades.

Palavras-chave: Classificação Internacional de Funcionalidade, Incapacidade e Saúde, Doença de Parkinson, Terapia Ocupacional, Qualidade de Vida

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INTRODUCTION

The International Classification of Functionality, Disability and Health (ICF), based on a bio-psycho-social health model, aims to demystify the view that health condition alone has a direct influence on the performance of a subject's activities, when it also considers that in addition to the body functions and structures, environmental and personal factors can also interfere in that performance.¹

The study was made with subjects suffering from Parkinson's disease, due to the high epidemiological incidence, since it is considered the most common movement dysfunction in the world, behind only cerebrovascular diseases and arthritis, as the third most common chronic disease in the older age bracket.²

There is also an absence of studies relating environmental and personal factors with the functionality of Parkinson's sufferers, being observed through the ICF's bio-psycho-social model that other factors aside from health conditions can be identified as influential over the activity and participation of the subject.

OBJECTIVES

This research project sought to describe the difficulties in occupational performance of the subject suffering from Parkinson's through the COPM, to classify the data surveyed by the COPM in the ICF domains, and to correlate these domains with personal and clinical variables presented by the subjects of the research.

METHODOLOGY

This is a cross-sectional study, carried out with 46 subjects diagnosed as having Parkinson's disease, who receive treatment in an institution for subjects with this health condition in the city of Curitiba – PR.

Only subjects who had no other clinical condition associated with Parkinson's and who showed no dementia were accepted. The research was done after approval by the Committee for Ethics in Research (CEP) from the Health Sciences Sector from the Federal University of Paraná.

For correlation analysis the following were surveyed: data referring to the gender, marital status, type of residence, need for assistance in daily activities; data referring to age and time of diagnosis; data on the profile of the disease's evolution, according to the Hoehn & Yahr Scale,

utilized for recognition of Parkinson's gravity;³ and other data referring to clinical aspects such as rigidity and postural instability, evaluated in agreement with the "Unified Parkinson's Disease Rating Scale" (UPDRS).⁴ The subjects were asked which factors they felt interfered the most in their activity and participation.

The subjects who fitted the criteria for research were submitted to an initial evaluation, applying the Canadian Occupational Performance Measure (COPM). This evaluation developed by Mary Law et al⁵ and used by occupational therapists consists of a protocol centered on the client that aims to show the perception the subjects have about their own disability.⁶

A protocol centered on the patient with Parkinson's disease for their own evaluation is fundamental, for functional evaluations survey information about the capacity or performance of the subjects related to the moment of evaluation, which may be altered due to many variables, such as being "on" or "off" the L-Dopa use.

The COPM is a measurement individualized as a semi-structured interview, in which the subject indicates the most important daily activities that present difficulties. It encompasses three areas of occupational performance – daily life activities, productive activities, and leisure activities – attributing to them a degree of importance that varies from 0 to 10, in ascending order. In this evaluation the therapist scores the individual on five major problems in occupational performance they face, listing the compromised activities, according to the degree of importance established by the client.⁶

Through the COPM results the classification of compromised activities in the ICF domains was produced, seeking a unified terminology and the identification of which activities the subjects had the most difficulty in performing. According to the ICF reference, it was preferred not to distinguish between the Activity and Participation components, both being classified as Activity. Table 1 exemplifies, with 8 research subjects, how this correlation was made.

For classification, only the domains scored during the evaluation were considered, through the classification of the activities indicated in the COPM, in the ICF domains that were fitting.

Finally, for the statistical significance of the variables analysis the chi-square adherence test was utilized.

For correlation of the variables that most interfered in the participation capacity (occupational performance) of the sample group studied, the Chi-square test was utilized between the nominal variables and the Spearman non-parametric correlation test for the ordinal and numerical variables.

RESULTS

According to the research subjects, the factors that most interfere in their activity and participation are mainly the following: Involvement with the objective [Motivation – b1301 (Body Function)]; Medication [Medication – e1101 (Environmental Factor)]; Family (Immediate Family – e310 (Environmental Factor)]; Emotional Factors [Emotional Functions – b152 (Body Functions)]; Ambient Temperature [Climate – e225 (Environmental Factor)].

The activities scored through the COPM were classified in the ICF domains, through the analysis of compromised domains, according to the example of 8 research subjects in Table 1.

Table 2 describes the personal characteristics of the sample studied.

Table 3 describes the clinical characteristics of the subjects of the sample according to the Hoehn & Yahr Modified Scale.

Table 4 describes the clinical characteristics of the sample in relation to Rigidity and Postural Instability according to the UPDRS.

In the occupational performance evaluation, classifying the activities scored in the COPM in the ICF domains, the following performance problems were found: 15 subjects (32.6%) reported as their main difficulty: Community, Social, and Civic Life; 12 subjects (26.1%) reported Mobility; 10 subjects (27.1%) reported Personal Care; 5 (10.9%) reported Domestic Life, and 4 (8.7%) reported Learning and Application of Knowledge. Therefore from the 9 domains related to the activity and participation components classified by the ICF, the 46 subjects only reported difficulty in 5 of them.

The classification was made by analyzing the performance qualifiers, with the opinion of the researched subjects used as the main source of information in the analysis of the impaired activities, and it was possible to classify these aspects until the third level of the ICF (four numbers), which can be seen in the examples of Table 1.

In analyzing the statistical significance of the variables surveyed through the chi-square adherence test, no statistical significance was verified for $p < 0.05$ in all the variables surveyed.

In the correlation between the variables, in relation to occupational performance, classified in the ICF domains, no significant correlation was found among the nominal variables, such as marital status and gender, nor numerical such as age and time with PD, nor among the problems related to activity and participation classified in the ICF. However, among the

Table 1 – Correlation between the performance problems found in the COPM and classification and qualification in the ICF.

Subject	MDOC COPM	ICF		
		Level 1 - Domain	Level 2 + Qualif.	Level 3 + Qualif.
S1	1 socialization	9 Community, social, and civic life		Socialization d9205.2
S2	1 socialization	9 Community, social, and civic life		Socialization d9205.8
S3	1 cutting meat 2 handling wallet 3 using left hand to drive 4 taking a shower 5 performing automotive body work	4 Mobility 5 Personal care	Eat d550.1 Wash themselves d510.2 Using hand and arm d445.2	Drive motorized vehicles d4751.1 Handle objects d4402.2
S4	1 turning the mattress around 2 caring for flowers 3 self-care	4 Mobility 5 Personal care	Fine use of the hand d440.2 Wash themselves d510.3 Dress themselves d540.3 Eat d550.1 Drink d560.1 Care for their own health d570.3	Turning themselves over when lying down d4201.3
S5	1 standing up without support 2 walking without support 3 taking a shower 4 dressing themselves 5 cooking	4 Mobility 5 Personal care 6 Domestic life	Walk d450.4 Wash themselves d510.4 Dress themselves d540.3 Prepare meals d630.4	Remain standing up d4154.4
S6	1 socialization	9 Community, social, and civic life		Socialization d9205.8
S7	1 socialization	9 Community, social, and civic life		Socialization d9205.8
S8	1 washing dishes 2 turning over in bed 3 improving posture	6 Domestic life 4 Mobility		Cleaning kitchen and utensils d6401.1 Turning themselves over when lying down d4201.1 Remain standing up d4154.3

ordinal variables, only rigidity presented a correlation coefficient with the activities classified in the ICF, in the value of “ $r=0.452$ ” for $p<0.01$ demonstrating the existence of an average correlation among the variables.⁷

DISCUSSION

The ICF Health Model proposed by the World Health Organization (WHO) recognized the interaction of the various health dimensions, where the functionality or disability related to the activity and participation of the subject can be influenced not only by health condition or changes in the function and structure of the body, but also by environmental and personal factors.

This dimension is clearly observed when asking research subjects which factors interfere the most in the performance of their activities, where the five main problems reported were Motivation – b1301, Medication – e1101, Im-

mediate Family – e310, Emotional Functions – 152, and Climate – e225. That is, Functions and Body Structures have as much weight as Environmental Factors.

Personal factors also interfere strongly, despite not being classified in the ICF, due to a broad range of factors, and are present in all the subjects. An example of the sample related to gender can illustrate this: the women in the research, with an average age of 69.54 years reported no difficulties with learning and application of knowledge, and the men, average age of 65.50 years, reported no difficulties related to domestic life.

In addition to pointing out characteristics relative to gender, this data also indicates specific characteristics of a population in that age bracket, where women had the function of caring for the home and family and men had the function of maintaining the family economically.

In relation to the performance problems presented by the subjects, all that were surveyed by the CPOM could be classified with-

Table 2 – Personal characteristics of the 46 subjects with PD.

Characteristic	
Age (years)	67,6 ± 11,9 (33 - 84)
Female gender (%)	24 (52,2)
Duration of PD (years)	6,4 ± 4,2 (1 - 16)
Marital status (%)	Solteiro 4 (8,7)
	Married 32 (69,6)
	Widow(er) 9 (19,5)
	Not Informed 1 (2,2)
Type of residence	Apartment 35 (76,1)
	House 11 (23,9)
Resides with	Family members 22 (47,8)
	Spouse 19 (41,2)
	Caregiver 3 (6,5)
	Alone 3 (6,5)

in the activity and participation components of the ICF.

Of the domains presented as deficient, Community, Social and Civic Life presented the highest incidence of complaints, since these activities are performed spontaneously by the subjects, as a significant and important form of occupation.⁸

The elderly, the majority in this research, generally refer to socialization activities as one of the foundations for their quality of life. The beneficial effects that these activities are capable of producing on the elderly became evident, overall, after retirement, when community, social, and civic life must be intensified in the individual search for a subjective meaning, involving free activities, connected to the quality of life and to the promotion of health. Of those activities, leisure and spirituality are highlighted as the most common in older age.⁹

An important aspect is that all the subjects in the sample are members of the Parkinson's disease association in Curitiba – PR. This association is the only option in the city that offers medical, rehabilitative, psychological, and nursing assistance. It also maintains an agreement with the state government to distribute specific medication to its clientele. At the time of the research, not all of the more than 1,000 associates participate in the activities developed by the association, many of them only come to receive medication or even for medical consultation.

Table 3 – Classification of the sample in the Hoehn & Yahr Modified Scale.

Hoehn & Yahr Modified Scale	Frequency	Percentage
0 - No sign of disease	0	0
1 - Unilateral disease	5	10,9%
1,5 - Unilateral and axial involvement	5	10,9%
2 - Bilateral disease with no balance problems	7	15,2%
2,5 - Light bilateral disease, with recovery in the push test	11	23,9%
3 - Light to moderate bilateral disease; some postural instability; capacity to live independently	12	26,1%
4 - Serious disability, still able to walk and remain standing up without help	3	6,5%
5 - Confined to be or wheel chair unless he/she receives help	3	6,5%
Total	46	100%

Table 4 – Clinical description of the rigidity and postural instability according to the UPDRS.

Characteristic	Compromising Level	Number of subjects
Rigidity	0 – Absent	10
	1 - Small	5
	2 - Light to Moderate	23
	3 – Marked	6
	4 - Serious	2
Postural Instability	0 – Normal	13
	1 – Retropulsion	22
	2 - Absence of postural responses	7
	3 - Very unstable	2
	4 - Incapable of remaining erect without help	

Therefore, the subjects of the sample are those who also participate more intensely in the association's activities, that is, a group that strives for socialization. This characterization of the clientele can also justify the choice of the community, social, and civic life domain as the most present in the population studied.

Despite the COPM allowing the identification of a vast array of activities, which can be classified in the ICF domains, we verify that the "Tasks and General Demands", "Communication", "Interpersonal Relationships", and "Main Life Areas" domains were not mentioned by the subjects of the research as a performance problem.

It is noteworthy the COPM is an evaluation that shows the perspective of the subject on his/her own disability, being that the domains that were not mentioned demonstrate little or no relevance for the sample studied.

Two aspects could justify the absence of these domains in the population studied. One of them is one of the exclusion criteria of the research, that there be no dementia (Intellectual Function). Which leads to the question: What is the interference of Mental Functions into the aspects related to general demand tasks and communication? Another factor to be considered is that the sample has average age of 67.61 years, an age bracket where normally an established condition is found in relation to interpersonal relationships and the main areas of life (work, education, and financial life). However, these are only suppositions.

As shown, rigidity constitutes the only domain related to body function and structure with any significant correlation in the five activity and

participation domains indicated by the subjects evaluated. The negative value (38 of the 46 level 2 subjects – light to moderate, downwards, on a scale from 0 to 4) demonstrates a majority, and subjects with a lesser rigidity profile (according to UPDRS scale) presented a greater number of complaints than those more impaired.

This result is compatible with the affirmation that PD imposes a progressive loss of abilities, especially at the beginning of symptomatic manifestation in which there are no significant cognitive deficits, making the afflicted person's self-image more painful. At the beginning of the disease, the perception of disability is more evident, since the person loses much of what he/she was, observing the loss of abilities and of capacity to interact with the environment, until the person understands and adapts to his/her new health condition.¹⁰

Thus, in addition to the low degree of rigidity, the majority of subjects in this level defined the correlation.

The bio-psycho-social model proposed by ICF allows a wide discussion about the considerations on rigidity. When talking about activity from the perspective of the subject we do not mean capacity, but performance, for that is what the subject exposes of his/her real world. There is much more interference with performance than with those domains related to Body Functions and Structures. That is, Environmental Aspects and Personal Aspects also affect performance. The ICF model allows this understanding, this broad holistic perspective, about the activity and participation of the subject.

From there we diverge from the medically linear model because the incapacity, the Body Functions and Structures deficit,

which would be evidenced by an increase in rigidity, does not necessarily point to a worsening of the performance, but rather to the perspective the subject has of their own performance, which is diminished due to a combination of components.

It is possible to suppose that the less compromised subjects are still living the experience of lost abilities, without a total understanding of it, contrary to others more compromised, who had been losing abilities and occupational roles, becoming restricted to specific complaints, for according to this study they have difficulties especially in the mobility and personal care domains, no longer complaining about other possible domains.

In addition, the continuous use of medication for the treatment of PD, especially levodopa, brings with it a decrease in the periodicity between the "on" and "off" phases, characterizing short stages of functionality and long stages of disability, with devastating collateral effects, generating a stronger feeling of incapacity and resignation in the subjects, aware of their health condition.³

The COPM is an individualized evaluation that allows the subject to indicate the activities that have been compromised for various reasons.⁶ In the occupational performance evaluation of PD, this evaluation was adequate for encompassing the perspective of the subjects about their functionality, discarding the professional view seen as being the only one, since it can be mistaken in its lack of mundane knowledge of the patient, especially on the relationship between the "on" and "off" phases of the medication which alter their functional capacity.¹¹

However, despite the COPM identification of problem-activities in the daily life of the subjects, it is fundamentally important to observe the subject performing those problematic activities in his/her real environment, whether to propose a new intervention, or to identify other factors that may be interfering in his/her performance. The analysis of the activity will allow verification of the possibility to remedy the capacity or of the need to adapt in order to improve the performance of the subject in that activity.

Keeping the COPM evaluation of the subject's activity in focus, the bio-psycho-social health model proposed by ICF allowed a broad view on the subject's capacity and performance of these activities. That is, which changes may be interfering with the body function and structure, the environmental facilitators or barriers, or even personal factors.

The experience with the use of the COPM as an evaluation tool and of the ICF as a classification and health model allowed not only the evaluation, classification, and bio-psycho-social analysis of the performance problems found by the subjects, but also the development of broad intervention proposals concerning the rehabilitation process.

The utilization of the ICF has also shown the importance of trans-disciplinary work, where the various components of the proposed health model could be articulated in the practices of evaluation and of intervention by health science professionals or even of those other sciences such as social or human. Through a universal language, its only objective is to seek effective results that permit the social inclusion of the person with disability.

CONCLUSION

The COPM allowed us to describe the occupational performance problems of the subject from a real perspective, nullifying the interference of factors connected to the use of medication. It has proven to be a valid tool for the evaluation of subjects with PD.

The classification of the performance problems described by the COPM within the ICF framework was easily performed, with the qualification of the performance easily scored with the subject. In that way, the COPM has shown to be viable as an evaluation instrument that makes it possible to classify its results in the ICF, as observed in this study, in which all the scored activities could fit into the ICF domains.

The bio-psycho-social health model facilitates the reading of the problem in a broad model, which aids the health professional in

correlating it with the different variables surveyed, with a uniform language, also favoring the division and integration of actions from the interdisciplinary team, and the development of public policies and health services that serve the clinical and personal needs of a specific clientele, and that may come to favor an effective intervention based on evidence.

There was no correlation between the personal variables and the domains classified in the ICF, and in relation to the clinical variables only rigidity presented an average correlation, identifying subjects with lower degrees of rigidity who reported more problems related to their functional condition.

REFERENCES

1. CIF: Classificação Internacional de Funcionalidade, Incapacidade e Saúde. São Paulo: Edusp, 2003.
2. Francisco GE, Jain SS. Doença de Parkinson e outros distúrbios do movimento. In: Delisa JA. Tratado de medicina de reabilitação: princípios e prática. 3 ed. Barueri: Manole; 2001. p.1089-96.
3. Fahn S, Przedborski S. Parkinsonismo. In: Rowland LP. Merrit: tratado de neurologia. 11 ed. Rio de Janeiro: Guanabara Koogan; 2007. p.768-83.
4. Goulart F, Pereira LX. Uso de escalas para avaliação da Doença de Parkinson em Fisioterapia. Rev Fisioter USP. 2005;(1-2):49-5.
5. Law M, Baptiste S, Carswell A, McColl MA, Polatajko H, Pollock N. Medida Canadense de desempenho ocupacional (COPM). Belo Horizonte: UFMG; 2009.
6. Carswell A. Medida de performance ocupacional canadense. In: Sumsion T. Prática baseada no cliente na terapia ocupacional: guia para a implementação. São Paulo: Roca; 2003. p. 183-202.
7. Pina APB. Investigação e estatística com o Epiinfo. Curitiba: Instituto da Droga e Farmacodependência; 2005. p.20-32.
8. Cavalcanti A. Avaliação da recreação e do lazer. In: Cavalcanti A, Galvão C. Terapia ocupacional: fundamentação e prática. Rio de Janeiro: Guanabara Koogan; 2007. p.69-70.
9. Wilson L. Atividade e participação: parte 2. In: Atwal A, McLnytre A. Terapia ocupacional e a terceira idade. São Paulo: Santos; 2007. p.187-202.
10. Turner A. Occupational for therapy. In: Turner A, Foster M, Johnson SE. Occupational therapy and physical dysfunction: principles, skills and practice. 5th ed. Londres: Churchill Livingstone; 2002. p.115-30.
11. Gaudet P. Measuring the impact of Parkinson's disease: an occupational therapy perspective. Can J Occup Ther. 2002;69(2):104-13.