

Computer uses and difficulties in patients with Parkinson's disease

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Objectives:

The purpose of the study is to assess computer use habits and difficulties of patients (pts) with Parkinson's disease (PD). These are preliminary data for the MAMEM project (*Multimedia Authoring and Management using your Eyes and Mind*).

Background:

Motor and non-motor symptoms of PD affect the ability to use computers. There are very few studies concerning computer use of patients with PD. Although patients consider computer use as an important part of their everyday life they face many difficulties using the keyboard and the mouse.

Methods:

Thirty five PD pts [28 men ,7 women] with a long experience in computer operation were included in the study. Their mean age was 59.5 (SD8.27) years. Most of them were in Hoehn and Yahr stage II (N=32). PD pts uses, habits , and difficulties with the computer were explored by means of a structured interview which provided information in the form of yes/no answers to questions relevant to a wide range of usual computer uses and applications as well as difficulties in performing various tasks relevant to computer operation .Two quantitative scales: a) the Computer Contribution in Life Scale (CCLS) referring to the contribution of the computer in a patient's social life ,every day activities, emotional well- being [total score: 9=not important / 45= very important] and b) the Disease Impact on Computer Operation Scale (DICOS) ,exploring the disease impact on various aspects of computer operation [total score: 11=no effect / 55= maximum effect] were also employed. Both Questionnaires are presented in Appendix.

Statistical Analysis: Reliability of both scales was assessed by means of Cronbach's alpha coefficient.

Results:

PD pts reported having a mean 13.9 (SD= 9.8) years of computer experience and a mean daily use of 3.7 (SD=2.6) hours. The most frequent computer uses were communication (80%), information (62.9%), social participation(54.3%) and everyday finances (51.4%). The most frequent computer applications used were internet browser (94.3% and e-mail (80%).Other relevant applications are presented in table I.

Specific difficulty was reported in the following tasks: double clicking (48.6%),moving cursor (45.7%),using two keys at once (42.9%) ,keyboard use (37,1%),etc.[figure 1].

Reliability analysis for both scales yielded satisfactory results. Cronbach's alpha was 0.76 for CCLS and 0.92 for the DICOS, while item to total correlations ranged from 0.224 (*item:emotional wellbeing*) to 0.649 for CCLS and from 0.436 to 0.772 for DICOS. The two quantitative scales yielded moderate mean total scores [23.2 (SD 7.2) for CCLS] and [25.9 (SD9.9) for DICOS].Boxplots of both scales scores are presented in figure 2 & 3.

Table I:Important computer applications for PD patients

Application	%
Internet browser	94,3
E-mail	80%
Word processor	47,5
Audio/video/image application	42,9
Spreadsheets(e.g. Excel)	25,7
Presentation software	17,1
Programming database	17,1
Games	22,9
Media editing applications	5,7

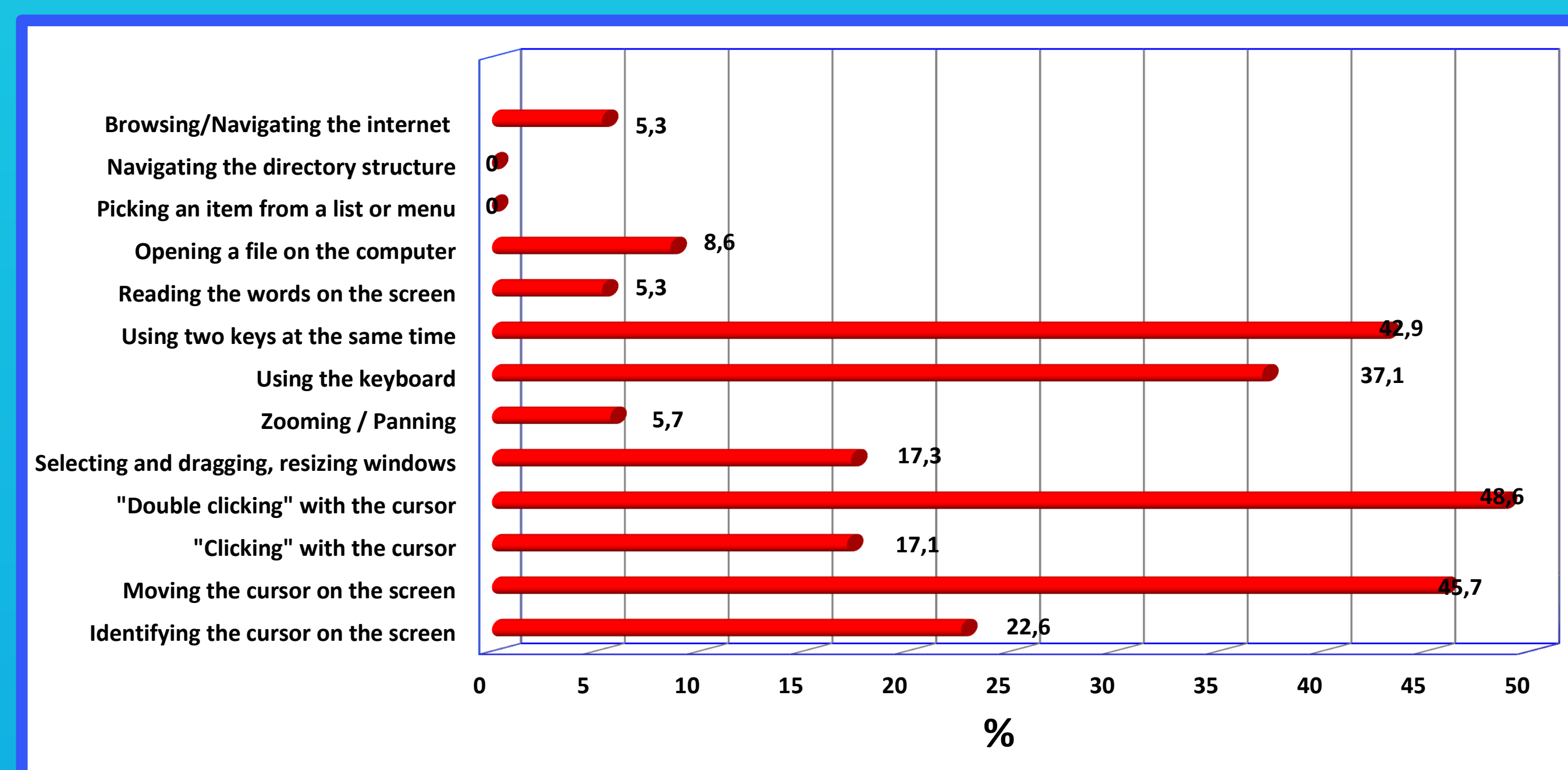


Fig.1 PD pts difficulties with certain computer uses

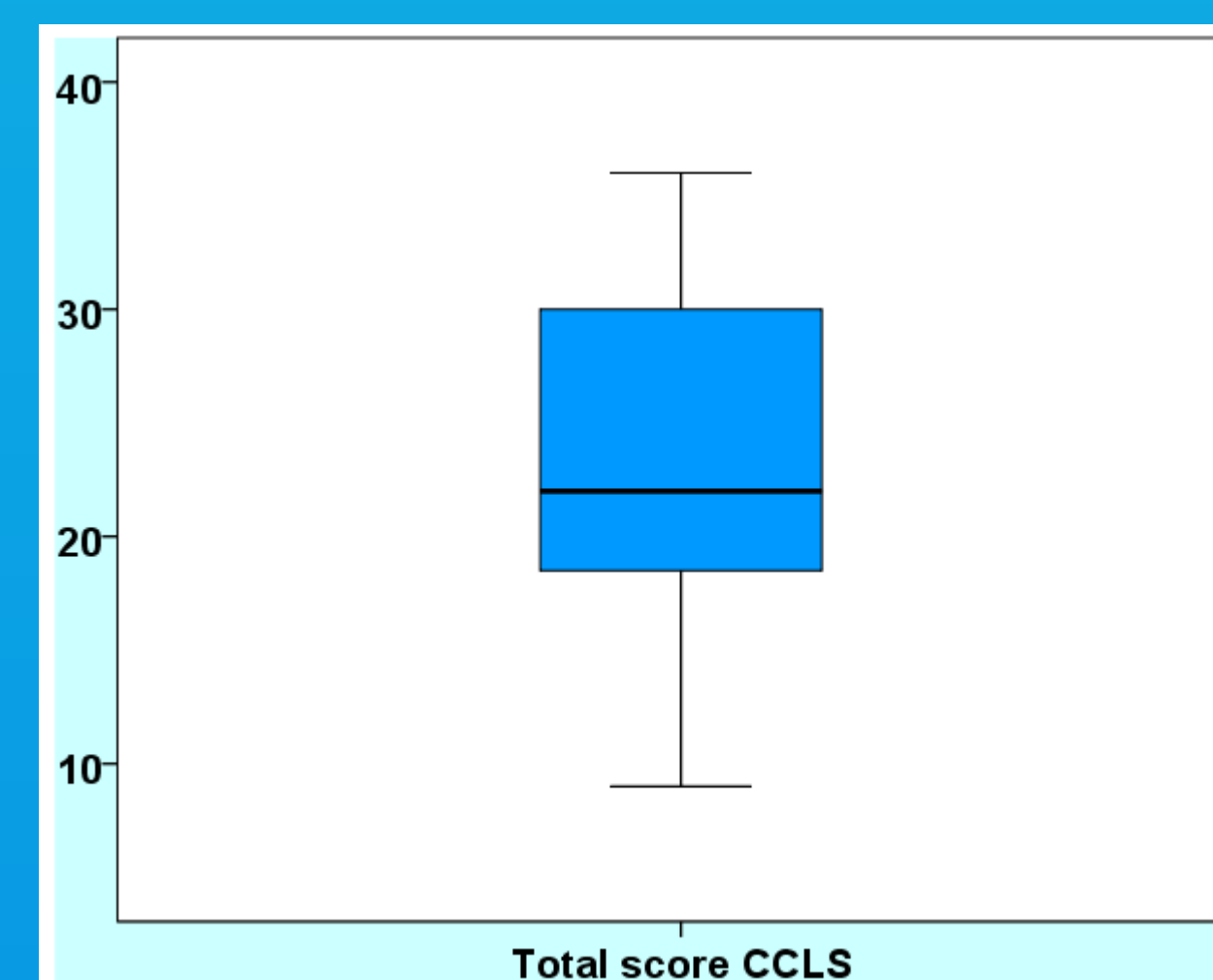


Fig 2.Boxplots of CCLS scale scores

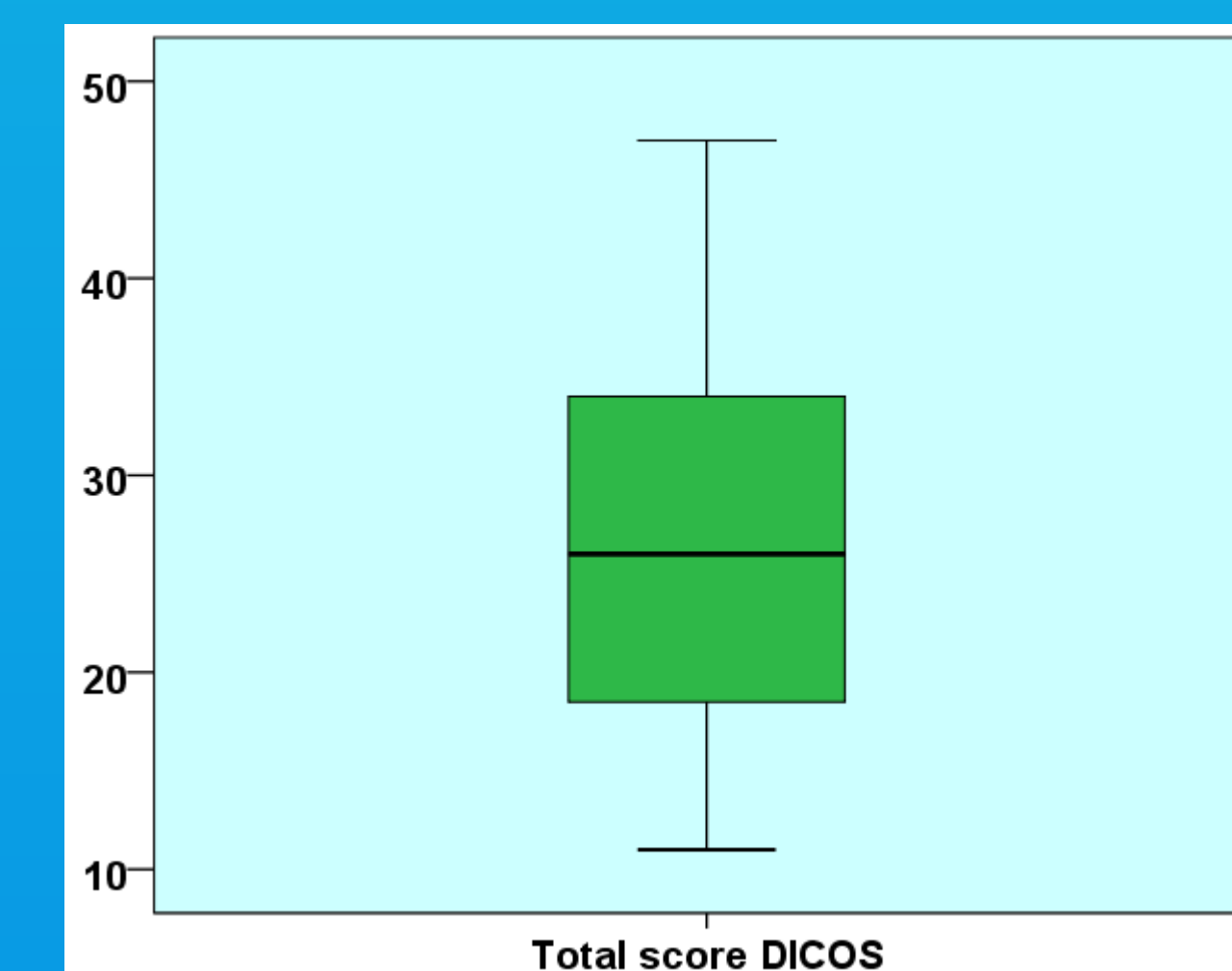


Fig3.Boxplots of CCLS scale scores

Conclusions: Our preliminary results highlight the various aspects of computer uses and difficulties experienced by PD pts. This information is important for the development of innovating technology helping patients to overcome their specific disabilities.

APPENDIX

How important is the contribution of computer use n in the following aspects of your life?	
CCLS Items	1- not important at all, 5- very important)
Interpersonal interactions and relationships	1 2 3 4 5
Close, intimate relationships	1 2 3 4 5
Educational attainment	1 2 3 4 5
Work and employment status/potential	1 2 3 4 5
Participation in desired community, social and civic activities	1 2 3 4 5
Autonomy and self-determination (making decisions)	1 2 3 4 5
Fitting in, belonging, feeling connected	1 2 3 4 5
Emotional well-being	1 2 3 4 5
Overall health	1 2 3 4 5

How does your current physical condition affect the following computer use aspects?					
DICOS items	No effect	Mildly	Moderately	Substantially	Completely
Comfort	1	2	3	4	5
Independence	1	2	3	4	5
Satisfaction	1	2	3	4	5
Pain	1	2	3	4	5
Speed of operation	1	2	3	4	5
Fatigue	1	2	3	4	5
Accuracy of operation	1	2	3	4	5
Endurance	1	2	3	4	5
Effectiveness	1	2	3	4	5
Ease of use	1	2	3	4	5
Enabling privacy	1	2	3	4	5

Disclosure:

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