

Correlation of Daily Energy Expenditure with Motor and Non-Motor Symptoms of Parkinson's Disease

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Background

Human activities affect quality of life (QOL), health, and cognition. Higher physical activity levels may improve functioning in patients with Parkinson's disease (PD). We aimed to determine how veterans with PD spend their time and describe the association between type and intensity of daily energy expenditure (DEE) with socio-demographic factors and motor and non-motor symptoms in patients with this diagnosis.

Methods

100 veterans with PD answered a mailed survey, including an investigator-generated PD activity questionnaire (measuring frequency, type, and intensity of daily activities), the Beck Depression Inventory-II, the Parkinson's Disease Questionnaire-8 (a QOL instrument), and a demographic survey. We calculated DEE in kilocalories (Kcals). Data were calculated with descriptive statistics and product-moment correlations using SAS-9.2.

Results

- Patients expended 47.1% of DEE on physical activities, 14.8% on activities of daily living (ADL), 14.8% on intellectual activities, 12.7% on social activities, and 10.6% watching TV.
- Depression was greater in those with higher DEE in ADL ($r=0.25$, $p=0.0201$) and TV viewing ($r=0.22$, $p=0.0403$).

- Less depressed patients expended more DEE on vigorous activities ($r=0.25$, $p=0.0221$). (Only 2% of all DEE fell into the vigorous category.)
- QOL was reduced for those with higher physical DEE ($r=-0.21$, $p=0.0398$).
- Pain was positively associated with higher DEE on intellectual ($r=0.21$, $p=0.0384$), and light intensity activities ($r=0.22$, $p=0.0298$).
- Patients rated fatigue and pain as having the greatest impact upon their daily activities.

Table1. Description of the Study Population

Variables	Patients
Age (years)	
Mean(SD)	72.8 (9.0)
Range	50-89
Men/women, n	98/2
Disease Duration (years)	
Mean (SD)	8.2 (6.2)
Range	0.5-37
Self-reported health status, n (%)	
Poor	6 (6.5)
Fair	45 (45.5)
Good/excellent	48 (48.5)
Self-reported QOL, n (%)	
Not good	15 (15.6)
Sometimes good	21 (21.9)
Usually good	52 (54.2)
Could not be better	8 (8.3)
UPDRS, Mean (SD)	
I-Mentation	3.1 (1.9)
II-ADL	13.8 (6.0)
III-Motor	27.1 (9.0)
Schwab & England, Mean (SD)	78.1 (15.4)

Table 2. Effects of PD Symptoms on Daily Activities of Veteran with Parkinson's Disease

Variable	# of subjects (n)	Mean	SD	Range
Average pain rating	73	4.5	2.8	0-10
Effect of pain on daily activities	74	4.1	3.3	0-10
Effect of memory problems on daily activities	79	3.5	2.8	0-10
Amount of fatigue during past 2 weeks	94	5.1	2.6	0-10
Effect of fatigue on daily activities	93	4.8	2.8	0-10
Effect of depression on daily activities	63	3.3	3.4	0-10
Degree of ADL-IADL assistance needed	93	2.8	2.8	0-9

Patients rated nonmotor symptoms on a Likert-type scale of 0-10 with 0 being "not at all" and 10 being "a great deal."

Conclusions

- Physical activities consumed a larger amount of patients' time because we included all instrumental activities of daily living (IADL) that involved movement (i.e. laundry, household chores, errands) in this category.
- Activities prior to PD were more active (fishing, gardening) and became more sedentary/passive after disease onset.
- TV viewing comprised 10% of DEE and viewing frequency more than doubled after PD onset.
- Patients rated fatigue and pain as having the most impact on daily activities than did memory problems or dependency in ADL-IADL.
- Interventional randomized, controlled studies are needed to examine all realms of activity in PD patients.
- We recommend patient and caregiver counseling regarding the importance of social, physical, and cerebral activity.

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