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REVOLUTIONISING MEDICINE - THE NEW FRONTIER

Physical Activity Levels of people with Parkinson's Disease Living in Singapore

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Background & Aims

Parkinson's disease (PD) is common in Singapore, and affects older adults. It is important to identify modifiable risk factors, like physical activity levels (PALs) as patients often become more sedentary as their disease progresses, placing them at risk of frailty and cardiovascular diseases[1].

Physical activity, defined as bodily movement that requires energy expenditure[2], includes exercise and activities done as part of working, active transportation, house chores, and recreational activities. Little is known of PAL or its associated factors in our local PD population. These findings could provide insights on future treatment approaches for these people. Therefore, this study aimed to investigate:
1) PAL among people with PD in Singapore.
2) factors associated with PAL. These factors include personal characteristics, presence of caregiver, and impact of COVID-19 restrictions.

Methods

Design & Sampling: Cross-sectional, convenience (IRB no 2020/2284)
Setting: Participants who attended the outpatient clinics at the Singapore General Hospital between August 2020 to February 2021, were invited to participate. Table 1 summarises the recruitment criteria.

Table 1: Recruitment criteria

Inclusion criteria:	Exclusion criteria:
1. Understand spoken and/or written English	1. Presence of any orthopaedic or neurological condition (i.e. fracture, stroke) that limits movement and mobility to a large extent
2. Diagnosed with idiopathic PD	2. Severe cognitive impairments

Data Collection: A 20-minute anonymous online Qualtrics survey (Figure 1) done independently or with a study member's help. The following data was captured:
- Demographic and clinical profile: age, gender, disease severity, employment status and presence of caregiver
- Main Outcomes:
  PALs - International Physical Activity Questionnaire (IPAQ)[1]
- Factors associated with the main outcomes:

1. Self-efficacy - Self-Efficacy to Exercise scale (SEE)
2. Mood - Parkinson Anxiety Questionnaire (PAS)
3. Fear of falling - International (FES-I)

Questions about the impact of safe distancing measures were asked.

Figure 1: QR code for study questionnaire

Statistical analyses
PAL was summarized descriptively while Kendall's tau_b and Mann-Whitney were used to examine the association of each factor (continuous or fixed respectively) to PAL.

Results

Twenty-six participants completed the survey. Their characteristics are described in Table 2. Figure 2 show the distribution of PALs. The participants reported low PALs (1571.50±2179.28 METs min/week). PAL demonstrated significantly strong correlation with self-efficacy (τb=0.359, p=0.011). There were non-significant negative moderate correlations between fear of falling (τb=-0.246, p=0.081) and anxiety (τb=-0.211, p=-0.138) with PALs. Participants who were perceived to have been affected by COVID-19 restrictions reported lower PAL versus those who did not (Affected Median=629.50±1429.187 METs min/week, n=20; Unaffected Median=1575.00±3671.624 METs min/week, n=6, p=0.14). Age, gender, disease severity and caregiver support did not seem to have a relationship with PAL.

Results

Table 2: Participant characteristics n=26 (Mean ± SD)

Age (years)	67.46 ± 9.08	**Disease Stage (%)**	Early=34.62 Moderate=53.85 Late=11.54
Gender (n [%])	Female=9 [35] Male=17 [65]		
Presence of Caregiver (%)	Yes=57.69 No=42.31	**Symptoms controlled by medication (%)**	92.31
Caregiver support (%)	Yes=86.67 No=13.33	**Disease Duration (years)**	6.73 ± 7.21
Employment (n [%])	Employed=5 [19.23] Unemployed=21 [80.77]	**Parkinson's Anxiety Scale (score [range])**	12.88 ± 9.33 [1-26]
Self-efficacy for Exercise (score [range])	5.89 ± 2.83 [2.22-10]	**International Physical Activity Questionnaire (Mets min/week)**	1571.50 ± 2179.28
Short Falls efficacy scale – International (score [range])	41.31 ± 13.68 [20-71]	**Sedentary Behaviour Questionnaire (hours per week)**	60.53 ± 27.61

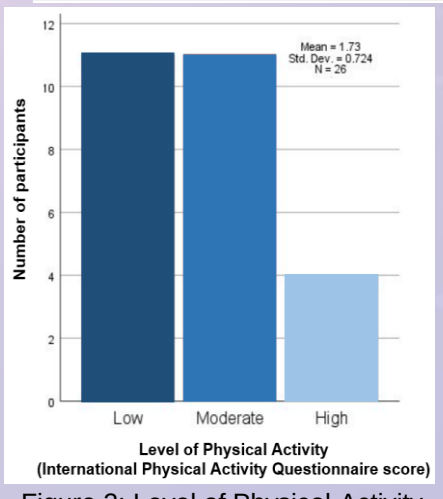

Figure 2: Level of Physical Activity

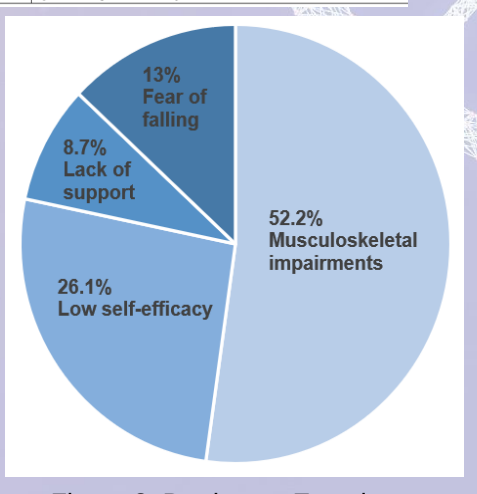

Figure 3: Barriers to Exercise

Discussion

Surprisingly, our participants had lower PALs than an Italian PD sample during lockdown[3], indicating our sample was very much less active. Barriers to exercise (Figure 3) were similar to previous literature, where fear of falling[4] and mood[5] factors were identified. Lack of facilities such as gyms and activity restrictions such as inability to attend church were reasons for reduced PALs due to distancing measures. Customised home-based programmes with behavioural strategies to increase self-efficacy as well as reduce anxiety and fear of falling, and address musculoskeletal limitations should be developed locally to increase PALs. This study's limitations include having a small sample size and possible recall bias from the subjective reporting using questionnaires.

Conclusion

PALs appeared to be low in our local PD sample. Although participants with higher exercise self-efficacy levels had significantly higher PALs, other non-significant trends involving personal factors were observed: people who were more anxious and fearful of falling had reduced PALs. Hence, further studies which are sufficiently powered, with objective measures of PAL are needed. Nevertheless, our results support the need for home-based programmes to increase PALs while addressing influential personal & physical factors.

Reference

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