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Impact of home confinement during COVID-19 pandemic on Parkinson's disease



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Home confinement (HC) during coronavirus disease 2019 (COVID-19) pandemic has affected follow-up visits and medication availability of patients with Parkinson's disease (PWP), raising concern over their clinical stability [1]. However, a systematic assessment is lacking so far. We planned this pan-India multi-centric study to evaluate clinical stability of PWP during HC and factors associated with worsening, if any.

This cross-sectional study was conducted from May 25 to July 20, 2020. We recruited PWP aged 18 or above, following at nine Movement Disorder Centres across India, after obtaining approval from respective ethics committees. After documenting digital informed consent, an on-line questionnaire (Annexure 1), designed and validated by the authors, was shared with the participants using Survey Monkey Audience. Pregnant females; those with significant cognitive decline and caregivers were unavailable to respond on their behalf; patients working in essential services viz., medical, paramedical staff and policemen; and those with COVID-19 infection or quarantined for the same were excluded. The analysis was done using Statistical Package for Social Sciences (SPSS) version 21.0. Descriptive statistics were calculated. Association between categorical variables was assessed using the Chi-square test. McNemar test was used to find a change in proportion for the paired data. Bonferroni correction for multiple variables was done, wherever needed.

Of the total 851 received responses, 19 were incomplete. Analysis was done on 832 responses. The majority of respondents (83.7%) were aged 50 years or older, with nearly one-third (32.5%) in 60–69 years age-group. More than two-fifth respondents (42.9%) were from northern India, 24.7% from southern, 18.5% from eastern, and remaining from Western India. The baseline characteristics of the study population are shown in [Supplemental Table 1](#).

While worsening in slowness, stiffness, tremor, gait, freezing of gait, and speech was reported by one-fifth PWP, a similar proportion reported worsening of non-motor symptoms viz., easy fatigability, pain, anxiety, depression, constipation, and forgetfulness ([Table 1](#)). Sleep disturbances were reported by 35.4% respondents, with 23.9% reporting worsening or new-onset sleep disturbances within the past 3 months ([Supplemental Table 1](#)). Overall 38.5% patients reported worsening of PD symptoms.

Association of worsening in motor and non-motor symptoms was analyzed with independent factors including available support at home during HC, duration of HC, PD duration and difficulty in seeking formal

neurology consultations (FNCs) and/or medicines for PD (PD-meds) ([Supplemental Table 2](#)). HC duration >60 days was significantly associated with worsening in tremor ($P = 0.003$), speech ($P = 0.002$), and urinary problems ($P < 0.001$). Worsening in gait and postural dizziness were significantly associated with lack of available support at home during HC ($P < 0.001$) and PD duration > 7 years ($P = 0.004$), respectively. Sleep disturbances were common in those lacking adequate support at home during HC ($P = 0.011$), HC duration > 60 days ($P = 0.004$) and PD duration > 7 years ($P = 0.003$) ([Supplemental Table 2](#)).

Interestingly, one-third patients (33.9%) who adopted new exercises/hobbies during HC experienced significantly reduced worsening in slowness ($P = 0.001$). Although difficulty in seeking FNCs and/or PD-meds was not an independent predictor of symptomatic worsening, it was reported by 42.3% patients, with lack of transport facility (31%) being the most common reason. Medication unavailability was reported by 7.5% patients. While there was no significant change in duration of daily physical exercise ($P = 0.203$), daily screen time significantly increased during HC ($P < 0.001$) ([Supplemental Table 1](#)). During HC, 54.2% patients reported dissatisfaction with their quality of life, with worsening of PD symptoms (38.5%) and fear of contracting COVID-19 (19.5%) being the common reasons.

Our multicenter study shows worsening/appearance of new motor and/or non-motor symptoms in 38.5% PWP. Only 5% PWP reported similar worsening in a recent study conducted in the initial weeks of HC [1]. Stress resulting from COVID-19 pandemic and prolonged HC may result in global motor worsening in PD [2]. Additionally, staying in a confined space might worsen gait and increase freezing [3]. Deficiency in dopamine-dependent adaptation, essential for coping with stress during COVID-19 pandemic, may worsen depressive and anxiety symptoms [2]. Depressive and anxiety symptoms along with increased screen time might have worsened sleep in our patients [4].

Medication unavailability (7.5%) was not a major concern in our patients, probably related to largely uninterrupted pharmaceutical supply during the pandemic. Only 2% cases reported medication unavailability in the initial weeks of HC [1]. A major limitation of our study was the inability to physically examine patients and confirm their responses, with likely under- or overestimation of worsening. Majority of physical examination of PD patients, except rigidity and postural reflexes, can be shared on video and use of telemedicine may benefit them during the

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Table 1

Perception about change in motor and non-motor symptoms in Parkinson's disease patients during home confinement as compared to pre-home confinement period.

Sl. No.	Clinical characteristics (n = 832)	Never had this symptom (n; %)	No worsening (n; %)	Worsening (n; %)
A. Motor symptoms				
1	Tremor	99 (11.9)	560 (67.3)	173 (20.8)
2	Stiffness	118 (14.2)	511 (61.4)	203 (24.4)
3	Slowness	63 (7.6)	510 (61.3)	259 (31.1)
4	Reduced clarity of voice	337 (40.5)	344 (41.4)	151 (18.2)
5	Difficulty in Swallowing	619 (74.4)	151 (18.2)	62 (7.5)
6	Drooling of saliva	568 (68.3)	194 (23.3)	70 (8.4)
7	Difficulty in walking	163 (19.6)	424 (50.9)	245 (29.4)
8	Freezing of gait	408 (49.04)	260 (31.3)	164 (19.7)
9	Falls	500 (60.1)	210 (25.4)	121 (14.5)
10	Use of walking aid	551 (66.2)	189 (22.7)	92 (11.1)
11	Dyskinesia	578 (69.5)	185 (22.2)	69 (8.3)
B. Non-motor symptoms				
1	Forgetfulness	412 (49.5)	271 (32.6)	149 (17.9)
2	Aggressive or impulsive behaviour	559 (67.2)	177 (21.3)	96 (11.5)
3	Depressive symptoms	408 (49.03)	256 (30.8)	168 (20.2)
4	Anxiety symptoms	407 (48.9)	246 (29.6)	179 (21.5)
5	Visual hallucinations	676 (81.3)	106 (12.7)	50 (6.01)
6	Auditory hallucinations	705 (84.7)	92 (11.05)	35 (4.2)
7	Obsessive thoughts	618 (74.3)	135 (16.2)	79 (9.5)
8	Pain	372 (44.7)	279 (33.5)	181 (21.8)
9	Urinary problems	439 (52.8)	282 (33.9)	111 (13.3)
10	Constipation	262 (31.5)	407 (48.9)	163 (19.6)
11	Easy fatiguability	252 (30.3)	371 (44.6)	209 (25.1)
12	Postural dizziness	496 (59.6)	228 (27.4)	108 (12.9)
13	Sleep disturbances	537 (64.5)	96 (11.5)	199 (23.9)

COVID-19 pandemic [5].

Disclosures (related to this manuscript)

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Dr. Niraj Kumar: Conception and design of the study, Analysis and interpretation of data, Preparing the first draft of the manuscript, Final approval of the version.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.parkreldis.2020.09.003>.

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