***Supplementary Material***

**Table 1.** Overview of selected studies.

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| **Author and year** | **Country** | **Subjects**  | **Age (years)** | **PD duration (years)** | **Study design** | **Data collection time point(s)** | **Assessment tool** | **Outcome measure** | **Main results** |
| Guo et al. (2020) | China | 113 PD (66 M, 47 F) | 69.5±7.8a | 6.05±0.8a | Longitudinal study | T0: February 1-March 31, 2020 (during restrictions)T1: April 1-30, 2020 (after restrictions) | Survey (T0)PDQ-39 (T0, T1) | DepressionSleepQoL | Data for 108 PD were collected.79.6% self- reported new/worsening symptoms:depression 50%, sleep disorders 39.8%. Worse QoL T0 vs T1 (p<0.001)mainly in PD who had difficulties in getting doctor’s advice and PD who changed routine medications.  |
| Janiri et al. (2020) | Italy | 134 PD (NR) | NR | NR | Cross-sectional study | April 1-15, 2020 (during restrictions) | Survey  | DepressionSleep | 75.4% reported lifetime psychiatric symptoms.22.8% self-reported worsening of psychiatric symptoms:depression 82.6%, insomnia 52.2%, RBD 21.7%. |
| Oppo et al. (2020) | Italy | 32 PD (24 M, 8 F)32 Caregivers (6 M, 26 F) | PD: 72.5±8.7aCaregivers: 64.6±10.3a | 11.6±4.5a | Cross-sectional study | Last 10 days of first 2020 lockdown (may 2020) | HADSNMSS (PD)PDQ-8 (PD) | Depression AnxietyNMSQoL | No differences in depression (p=0.126) and anxiety scores (p=0.808) in PD vs Caregivers.Worse anxiety score in PD not engaged in home physical activity (p=0.044) and PD with higher stress levels (p=0.006).Worse mood/cognition subscale score in PD with higher stress levels (p<0.05). Low impact of restrictions on QoL.  |
| Salari et al. (2020) | Iran | 137 PD (47 M, 90 F)95 Caregivers (24 M, 71 F)442 HC (NR) | PD: 55±10.7aCaregivers: 43±9.3aHC: NR | NR | Case-control study |  NR  | BAI-II-Persian version | Anxiety | Worse anxiety score in PD vs Caregivers and vs HC (p<0.001). |
| Shalash et al. (2020) | Egypt | 38 PD (29 M, 9 F)20 CG (14 M, 6 F) | PD: 55.6±9.9aCG: 55.5±5.7a | 4.7±3.2a | Case-control study | NR | DASS-21Ad hoc questionnairePDQ-39 | DepressionAnxietyAnxietyQoL | Higher prevalence and worse score for depression (p=0.015) and anxiety (p=0.001) in PD vs CG.  52.6% PD self-reported anxiety/stress due to COVID-19. Worse QoL in PD vs CG (p<0.001). |
| Song et al. (2020) | Republic of Korea | 100 PD (54 M, 46 F) | 70 (62.3-76)b  | 6 (4-10)b  | Longitudinal study | T0: December 2019-January 20, 2020 (before COVID-19 pandemic)T1: May 1-20, 2020 (during restrictions) | Ad hoc questionnaire (T1)SE-ADL (T0; T1) | DepressionSleepQoL  | Perception of worsened NMS in 27 PD: depression 5%, sleep reduction 5%. Worse SE-ADL score T0 vs T1 (p=0.031) in PD. |
| Subramanian et al. (2020) | USA | 1527 PD (677 M, 839 F and 11 NR) |  62.9±9.2a | 4.8±4.9a | Cross-sectional study | NR | PROMIS Global of QoL  | QoL | Data for QoL of 1451 PD (95%) were collected.Lonely PD showed greater symptom severity than not lonely PD (p<0.01) and rated lower QoL.PD who documented having a lot of friends had 21% fewer symptoms than those with few or no friends (p<0.01). |
| van der Heide et al. (2020) | the Netherlands | 358 PD (220 M, 138 F) | 62.8±9a | 3.9±1.8a | Longitudinal study | T0: visit 7.5 months before T1 (before COVID-19)T1: April 21-May 25, 2020 (during restrictions) | STAI (T0)PAS Part B (T1) | AnxietyEpisodic anxiety | High anxiety score at T0. High episodic anxiety score at T1.Higher episodic anxiety score at T1 and higher anxiety at T0 predicted increased psychological distress during the pandemic.COVID-19 pandemic leads to a worsening of PD symptoms by evoking psychological distress as well as reduced physical activity. |
| Xia et al.(2020) | China | 119 PD (61 M, 58 F)169 HC (76 M, 93 F) | PD: 61.2±8.8aHC: 59.8±8.1a | 6.84±4.6a | Case-control study | April 20-30, 2020 with reference to February-April 2020 (during restrictions) | PSQI HADS | Sleep DepressionAnxiety | PD had significantly higher PSQI score and higher prevalence of sleep disturbance vs HC (p<0.001). Worse depression score in PD vs HC (p=0.022), mainly in PD with poor sleep (p=0.002).No differences in prevalence of anxiety (p=0.410) and anxiety score in PD vs HC (p=0.579).Higher prevalence (p=0.038) and worse score (p<0.001) of anxiety in PD with poorer sleep.  |
| Balci et al. (2021) | Turkey | 45 PD (30 M, 15 F)43 HC (24 M, 19 F) | PD: 67 (60-73.5)b HC: 66 (58-71)b  | 8 (5-10)b  | Case control study | June 15-20, 2020 with reference to March 11-June 1, 2020 (during restrictions) | HADSAd hoc questionnaire  | DepressionAnxietySleep | No PD and HC had depression (p=0.524) or anxiety (p=0.977).Worsened sleep in 7 PD≥65 yr and 2 PD<65 yr. Worsened daytime sleepiness in 6 PD≥65 yr and 1 PD<65 yr. |
| de Rus Jacquet et al. (2021) | Canada | 417 PD (256 M, 161 F) | 68.2±9.7a | 8±5.4a | Cross-sectional study | May 20-September 16, 2020 with reference to mid March, 2020 (start of restrictions) | Survey  | DepressionAnxietySleep | Depression56 PD reported changes: 67.86% PD worsened, 32.14% had day to day change, none improved.Anxiety125 PD reported changes: 75.2% worsened, 1.6% improved, 23.2% had day to day change.Sleep63% PD no perceived changes in sleep, 8.39% improved, 28% worsened. |
| Del Prete et al. (2021) | Italy | 740 PD(NR) | NR | NR | Cross-sectional study | April 10-May 4, 2020 (during restrictions) | Survey  DASS-21 | DepressionAnxietySleepDepressionAnxiety | Data for 733 PD were collected.No worsening in mood score 74.9%. No worsening in anxiety score 74.6%. No new/worsening in insomnia score 77.4%.Data for 120 PD were collected. Total DASS-21 score (z score=0.57). |
| Dommershuijsen et al. (2021) | the Netherlands | 844 PD (523 M, 321 F) | 70.3±7.8a | 6.4±5.4a | Cross-sectional study | April 14, 2020- February 25, 2021 (during COVID-19 pandemic) | BDISTAIPDQ-39 | DepressionAnxietyQoL | Depression score increased as perceived COVID-19 stressors increased, mainly in women and PD with more severe symptoms.Anxiety score increased as perceived COVID-19 stressors increased, mainly in women, PD with more severe symptoms, disease duration >5 yr. and highly educated.QoL score increased as perceived COVID-19 stressors increased. |
| El Otmani et al. (2021) | Morocco | 50 PD (24 M, 26 F) | 60.4±10.4a | NR | Longitudinal study  | T0: March 16, 2020 (start of restrictions) T1: after 6 weeks of restrictions | HADS (T0, T1) Interview (T1) | DepressionAnxietyDepressionAnxiety | No differences in depression (p=0.14) and anxiety (p=0.44) scores T0 vs T1. Supporting factors: 40% the presence of relatives.Unsupportive factors: 33,3% the reduced physical activity;14% lack of family support.  |
| Fabbri et al. (2021) | France | 2653 PD (1459 M, 1194 F) | NR | NR | Cross-sectional study | March 16-May 16, 2020 with reference to mid March-mid April, 2020 (during restrictions) | SurveyPGI-I PDQ-8  | DepressionAnxietySleepDepressionAnxietyQoL | 40.9% of PD reported a worsening of symptoms.Perception of new/worsened symptoms: depression 3.4%, anxiety 6.1%, sleep disorders 4.1%.Perception of worsened psychic state domain (anxiety and depression) 46.3 %.Moderate impact of restrictions on QoL. Worse QoL in PD with more aggravated disease (p<0.0001). |
| Falla et al. (2021) | Italy | 14 PD (7 M, 7 F) | 64.9±8.5a | 5.7±4.1a | Longitudinal study  | T0: February 2020 (before COVID-19 pandemic) T1: April 24-May 1, 2020 (during restrictions) | GDSOR-PASMDS-UPDRS-Part IPDQ-39 | DepressionAnxietySleepQoL | 35.7% of PD presented depression at T0 and 28.6% at T1.No significant differences in depression score T0 vs T1 (p=1.000).Higher prevalence (78.6%) and worse total score of anxiety T1 vs T0 (p=0.007), also due to avoidance behaviour subscale worsening (p<0.001). Subjective worsening of sleep problems in 5 PD and daytime sleepiness in 8 PD at T1.No differences in QoL T0 vs T1 (p=0.221). |
| HØrmann Thomsen et al. (2021) | Denmark and Sweden  | 67 PD (35 M, 32 F) | 70 (IQR NR)b | 6 (IQR NR)b | Longitudinal study | T0: August-November, 2018 (before COVID-19 pandemic)T1: April-June, 2020 (during restrictions) | PRO-PD PDQ-8BDI-IIPDQ-39  | DepressionAnxietySleepQoLDepressionAnxiety (1 item)QoLSleep (1 item) | Data for 33 Swedish PD were collected.No differences in depression score T0 vs T1 (p=0.129).Worse anxiety score T1 vs T0 (p=0.035).Improved sleep score T1 vs T0 (p=0.039). Improved QoL T1 vs T0 (p=0.027). Data for 34 Danish PD were collected.No difference in depression score T0 vs T1 (p=0.981).Worse anxiety score T1 vs T0 (p=0.001).Improved QoL score T1 vs T0 (p=0.018).No differences in sleep problems score T0 vs T1 (p=0.253). |
| Kitani-Morii et al. (2021) | Japan | 39 PD (25 M, 14 F)32 CG (5 M, 27 F) | PD: 72.3±10.9aCG: 66.4±13.8a | PD <5: 22 ±56.4a PD ≥5: 17 ± 43.5a | Cross-sectional study | April 22-May 15, 2020 (during restrictions) | PHQ-9GAD-7ISIInterview  | DepressionAnxietySleepAnxietySleep | Data on depression of 38 PD and 31 CG were collected.Higher score (p=0.01) and prevalence (p=0.002)of clinical depression in PD using PHQ-9 (39%) vs CG (6%).No differences in prevalence and score in clinical anxiety in PD (48%) vs CG (34%) (p=0.223).No differences in prevalence and score in clinical insomnia in PD (33%) vs CG (21%) (p=0.286).No difference in subjective worsening of anxiety (p=0.25) and sleep (p=0.64) PD vs CG. |
| Knapik et al. (2021) | Poland | 30 PD (18 M, 12 F) | 69.7±7.9a | 7.68± 5a | Longitudinal study | T0: few months before COVID-19 pandemicT1: 90 days after restrictions | Ad hoc questionnaire about physical activity and fitness self-assessment (T0, T1)HADS (T1) | DepressionAnxiety | Reduction in the physical activity T1 vs T0 (p=0.034).No difference in the self-assessment physical fitness T0 vs T1 (p=0.149).The self-assessment of physical fitness explains anxiety in 30% and depression in 27% of PD. No difference in depression (p=0.603) and anxiety (p=0.917) scores between PD living alone vs PD living with relatives. |
| Kumar et al. (2021) | India | 832 PD (570 M, 262 F) | NR | NR | Cross-sectional study | May 25-July 20, 2020 (during restrictions) | Survey  | DepressionAnxietySleepQoL | 35.4% reported sleep problems. Better quality sleep in subjects with adequate physical activity vs group of low physical activity at both times (p=0.01) and vs the group with reduced physical-activity during home confinement (p=0.02).Higher prevalence of depression (p<0.001) and anxiety (p<0.001) in PD with new-onset/worsening sleep disturbance vs PD without sleep disturbances and PD with no-worsening sleep disturbances.Most PD (54.2%) were not satisfied with their current QoL. |
| Luis-Martínez et al. (2021) | Italy | 12 PD (8 M, 4 F) | 69.5 (67-73.8)b | 10.0 (8.0; 13.3)b | Longitudinal study | T0: 2 weeks before March 11, 2020 (before restrictions)T1: after May 4, 2020 (after restrictions) | ADL and IADL (T0, T1)PDQ-39 (T0, T1) | QoL | No differences in ability to perform ADL and IADL score T0 vs T1 (p>0.05). No differences in PDQ-39 score between T0 and T1 (p>0.05). |
| Sahin et al. (2021) | Turkey | 98 PD (52 M, 46 F)577 other chronic neurological diseases(225 M, 352 F)  | PD: 65±11a Other chronic neurological diseases(49 ± 17)a | NR | Case-control study | Data collected with reference to March-May, 2020 (during restrictions)  | WHOQOL-BREF | QoL | PD reported lower scores in the social subscale vs other medical conditions (p=0.002).No significant difference among the disease groups in WHOQOL-BREFs physical, mental, and environmental scores.  |
| Saluja et al. (2021) | India | 64 PD (39 M, 25 F) | PD: 65 (55.25-69.75)b  | 4 (2.5-7)b  | Cross-sectional study | June-September, 2020 (after restrictions) | NMSS PDQ-8 (PD) | DepressionSleepQoL | Subjective worsening symptoms in 26 PD: mood 42,3%, insomnia 34,6%, hypersomnolence in 7.7%.Worse QoL was predicted by worsening of NMS (p=0.0005). |
| Silva-Batista et al. (2021) | Brazil | 478 PD (311 M, 167 F) | 67.3±9.5a | 8.5±6.3a | Cross-sectional study | May-June, 2020 (during COVID-19 pandemic) | PDQ-8 | QoL | Good QoL reported by 49.7% PD, no variation in QoL reported by 30.3 % PD. |
| Suzuky et al. (2021) | Japan | 100 PD (45 M, 55 F)100 Caregivers (47 M, 53 F) | PD: 72.2±9.1aCaregivers: 65.5±12.0a | 5.8±4.4a | Case-control study | June-December, 2020 with reference to after mid April 2020 (during restrictions) | HADSPGIC scale (Only for PD)SF-8 | DepressionAnxietyDepressionSleepQoL | No differences in prevalence of depression (p=0.585) and anxiety (p=1.000) in PD vs Caregivers.PD self-reported no change in mood (56%) and sleep (48%).Physical function, role physical, general health, vitality and PCS scores were significantly lower in PD vs Caregivers (p<0.001). |
| Templeton et al. (2021) | USA | 28 PD (13 M, 15 F) | NR | 6.07a | Cross-sectional study | Exact timing NR | Survey  | QoL Sleep | Most PD felt at their best after physical activity (67.86%), being in a comfortable environment (60.71%), at the beginning of the day.Decreased duration of physical activity during the stay-at-home mandate (p=0.022).Worsened one symptom in 82.14% of individuals.Slight subjective worsening of sleep, mainly in females than males. |
| Krzysztoń et al. (2022) | Poland | 47 PD (30 M, 17 F) | 72.1±1.3a | NR | Cross-sectional study | December 23, 2020-June 23, 2021 (during COVID-19 pandemic) | Survey | DepressionAnxietyQoL | 9% of PD self-reported a worsening of depressive symptoms. Depressive symptoms worsen as the feeling of being alone/isolated increases (p=0.017).38% of PD self-reported anxiety.Anxiety symptoms decrease for:deterioration of contacts (p=0.035);and feelings of isolation (p=0.007).QoL decrease for:deterioration of contacts (p=0.022);feelings of isolation (p=0.009).  |
| Montanaro et al. (2022) | Italy | 100 PD (60 M, 40 F)60 Caregivers (21 M, 39 F) | PD:62.4±9.0aCaregivers: 62.1±9.2a | 13.4±4.6a | Case-control studies | T0: April-May, 2020 (during restrictions)T1: June-August 2020 (after restrictions) | HADS (T0: PD, Caregivers; T1: PD) Ad hoc questionnaire (T0: PD)  | DepressionAnxietySleep | Worse depression score in PD (35%) vs Caregivers (21.7%) at T0 (p=0.001). 39% PD and 40% Caregivers presented anxiety at T0.PD:No differences in prevalence of depression in PD T0 (35%) vs T1 (34.1%; p= 0.807). Decreased prevalence of anxiety in PD T1 (30,6%) vs T0 (39%; p=0.023).Worse anxiety score in PD treated with different types of therapy (p= 0.004).From the subjective report most PD referredno difficulty falling asleep (54%) at T0. |

a data presented as the means with standard deviation (SD)

b data presented as the medians with interquartile range (IQR)

Legend: ADL, Activities of Daily Living; BAI-II, Beck Anxiety Inventory II; BDI, Beck Depression Inventory; BDI-II, Beck Depression Inventory-II, CG, control group; DASS-21, Depression, Anxiety, and Stress Scale–21; F, female; GAD-7, 7-item Generalized Anxiety Disorder; GDS, Geriatric Depression Scale; HADS, Hospital Anxiety and Depression Scale; HC, healthy controls; IADL, Instrumental Activities of Daily Living; M, male; ISI, 7-item Insomnia Severity Index; MDS-UPDRS, Movement Disorders Society-Unified Parkinson disease rating Scale; NMS, Non-Motor Symptoms; NMSS, Non-Motor Symptoms Scale; NR, not reported; OR-PAS, 12 item Parkinson Anxiety Scale; PAS, Parkinson Anxiety Scale; PCS, Physical Component Summary; PD, Parkinson’s disease patients; PDQ-8, 8-items Parkinson’s Disease Questionnaire; PDQ-39, 39-items Parkinson’s Disease Questionnaire; PGI-I, Patient’s Global Impression-Improvement; PGIC, Patient Global Impression of Change; PHQ-9, 9-item Patient Health Questionnaire; PRO-PD, Patient-Reported Outcomes in Parkinson’s Disease, PROMIS, Patient-Reported Outcomes Measurement Information System; PSQI, Pittsburgh Sleep Quality Index; QoL, Quality of Life; RBD, Rapid eye movement sleep behaviour disorders; SE-ADL, The Schwab and England Activities of Daily Living scale; SF-8, 8-item Short Form; STAI, State-Trait Anxiety Inventory; VS, versus; WHOQOL-BREF, World Health Organization Quality of Life short form; YR, years.