Healthcare Differences and COVID-19 Impact on Parkinson’s Disease

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The coronavirus disease 2019 (COVID-19) pandemic has introduced drastic changes worldwide, particularly affecting chronic diseases such as Parkinson’s disease (PD).1 Different countries have implemented variable measures to control the pandemic with a different toll on patients, which also depends on the specific national healthcare. This notion inspired this cross-sectional-questionnaire-based study conducted in person between July and August 2021 and aimed at comparing the impact of forced lockdown in 60 consecutive PD outpatients followed in two movement disorders centers in North and South America. All the subjects fulfilled the following inclusion criteria: clinical diagnosis of PD; at least one evaluation in 2019; and consent to participate. Patients were instructed to answer taking into account the changes to their care caused by the lockdown.

Demographic characteristics were similar in both centers, although drug coverage was different (Table 1). Around 97% of patients in Toronto were fully-vaccinated against COVID-19 vs 57% in Buenos Aires (P < 0.001). Most patients were retired prior to the pandemic, and none lost their job during this period. Monthly income was however negatively affected during pandemic in Toronto (18%) and Buenos Aires (37%) (P = 0.146). Difficulties in getting essential supplies, laundry and house cleaning were more frequent in Toronto whereas anti-PD drugs supply was more frequently affected in Buenos Aires (26.7% vs 10%, P = 0.026, Table 1).

About 67% of Toronto patients and 90% in Buenos Aires had to make changes in their medical appointments (P = 0.01). Videocalls (40% vs 0%, P < 0.001) or phone calls (33.3% vs 3.3%, P = 0.006) were most frequently used in Toronto, whereas the vast majority of patients in Buenos Aires canceled (73.3% vs 16.7%, P < 0.001) or cannot schedule an appointment (53.3%, P < 0.001).

Around 30% of Canadian patients kept doing physical therapy, while 20% of them canceled or rescheduled. In Argentina 46.7% of patients canceled or rescheduled (P = 0.01, Table 1).

Regarding the overall impact of COVID-19 and forced lockdown on the quality of medical care for PD, most patients in Toronto felt that there are no differences (43.3% vs 16.7%), or recognized some difficulties with minimal impact (33.3% vs 23.3%). An extreme negative impact was described by 16.7% in Buenos Aires and only by 3.3% in Toronto (P = 0.024).

COVID-19 pandemic imposed drastic changes in PD care and this is clearly seen in our study, which also highlights country-specific differences. Canada has a provincial publicly-funded healthcare system, financed by 10.4% of its gross domestic product (GDP).2 In contrast, Argentina has a segmented health system divided in public, social security and private sectors; the health cost takes 8% of the GDP.3 In addition, a dedicated telemedicine program was not available prior to the pandemic for Argentinian patients, who were less likely to adopt telemedicine and had to cancel or postpone appointments more frequently. Fear of getting infected and cancellation of regular services were the main reasons.4 Our findings also emphasize the important role of telemedicine during lockdown.5

In conclusion, our study indicates that the national health policies should be taken into account when interpreting the literature on COVID-19 and planning strategies to improve the care of our PD patients during these difficult times.

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| Demographic, clinical and survey-related characteristics of the two cohort of PD patients followed in Toronto, Canada and Buenos Aires, Argentina |
| --- |
|  | Toronto Canada (n = 30) | Buenos Aires Argentina (n = 30) | P value |
| **Demographic features** |
| Age | 63.2 ± 10.8 (36–83) | 66.3 ± 9.8 (49–88) | 0.21 |
| Male sex | 17 (56.7%) | 18 (60%) | 0.79 |
| Age at PD onset | 52.1 ± 14.2 (29–81) | 58.4 ± 9.5 (38–78) | 0.10 |
| Hoehn & Yahr stage | 2.2 ± 0.5 (2–4) | 2.3 ± 0.4 (2–3) | 0.31 |
| **Drug coverage** |
| Medical insurance | 23 (76.7%) | 16 (53.3%) | 0.04 |
| Paid out of pocket | 2 (6.7%) | 5 (16.7%) |  |
| Drug samples or NGOs support | 5 (16.6%) | 4 (13.3%) |  |
| Medical insurance and paid out of pocket | 0 (0%) | 5 (16.7%) |  |
| **COVID-19 vaccine** |
| Fully vaccinated | 29 (96.7%) | 13 (46.4%) | <0.001 |
| Unable to schedule an appointment | 1 (3.3%) | 1 (3.3%) |  |
| Refusal | 0 (0%) | 2 (6.7%) | 0.74 |
| **Diagnosis of COVID-19** |
| Yes (hospitalized) | 0 | 2 (6.7%) |  |
| Yes (home care) | 0 | 2 (6.7%) |  |
| **Work status** |
| Retired before the pandemic | 21 (75%) | 16 (53.3%) | 0.19 |
| Unemployed before the pandemic | 2 (7.1) | 3 (10%) |  |
| Temporary interruption | 1 (3.6%) | 2 (6.7%) |  |
| Working hours reduction | 1 (3.6%) | 7 (23.3%) |  |
| Normal work activities | 3 (10.7%) | 2 (6.7%) |  |
| **Activities affected by COVID-19 pandemic** |
| Monthly income | 5 (17.9%) | 11 (36.7%) | 0.14 |
| Food supplies | 7 (23%) | 3 (10%) | 0.29 |
| Essentials supplies | 9 (30%) | 1 (3.3%) | 0.01 |
| Laundry and home cleaning | 9 (30%) | 1 (3.3%) | 0.01 |
| Care assistance (nurse, caregivers) | 3 (10%) | 0 (0%) | 0.23 |
| Drug supply | 3 (10%) | 8 (26.7%) | 0.02 |
| **Last medical appointment** |
| < 1 month | 10 (34.5%) | 6 (20%) | 0.07 |
| 1–3 months | 2 (6.9%) | 9 (30%) |  |
| 3–6 months | 9 (31%) | 6 (20%) |  |
| >6 months | 4 (13.7%) | 1 (3.3%) |  |
| >1 year | 2 (6.9%) | 6 (20%) |  |
| >2 years | 2 (6.9%) | 2 (6.7%) |  |
| **Follow-up visits** |
| Need for at least one change | 20 (67%) | 27 (90%) | 0.01 |
| Canceled | 5 (16.7%) | 22 (73.3%) | <0.001 |
| Impossibility to schedule | 0 (0%) | 16 (53.3%) | <0.001 |
| Replaced by videocall | 12 (40%) | 0 (0%) | <0.001 |
| Replaced by phone call | 10 (33.3%) | 1 (3.3%) | 0.006 |
| Replaced by other methods (e.g. emails) | 2 (6.7%) | 7 (23.3%) | 0.07 |
| Need to urgently contact the neurologist | 17 (58.6%) | 8 (26.6%) | 0.01 |

(Continued)
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**Author Roles**

1) Research project: A. Conception, B. Organization, C. Execution; 2) Statistical Analysis: A. Design, B. Execution, C. Review and Critique; 3) Manuscript: A. Writing of the first draft, B. Review and Critique.

**SRQ:** 1A, 1B, 1C, 2B, 3A
**AF:** 1A, 1B, 1C, 2C, 3B

**TABLE 1  Continued**

| Method of contact in case of urgency | Toronto Canada (n = 30) | Buenos Aires Argentina (n = 30) | P value |
|-------------------------------------|------------------------|-------------------------------|---------|
| In person                           | 3 (10%)                | 2 (6.7%)                      | 1       |
| Phone call                          | 10 (33.3%)             | 1 (3.3%)                      | 0.006   |
| Text message                        | 1 (3.3%)               | 1 (3.3%)                      | 1       |
| Videocall                           | 12 (40%)               | 0 (0%)                        | <0.001  |
| E-mail                              | 4 (13.3%)              | 3 (10%)                       | 1       |
| Contact with other health professional | 5 (16.7%)             | 0 (0%)                        | 0.05    |
| Physical therapy                    |                        |                               |         |
| Canceled                            | 4 (13.3%)              | 9 (30%)                       | 0.01    |
| Reschedule                          | 2 (6.7%)               | 5 (16.7%)                     |         |
| Normally performed                  | 4 (13.3%)              | 0 (0%)                        |         |
| Never performed                     | 5 (16.7%)              | 0 (0%)                        |         |
| Occupational therapy                |                        |                               |         |
| Canceled                            | 2 (6.7%)               | 2 (6.7%)                      | 0.4     |
| Performed using alternative methods | 1 (3.3%)               | 1 (3.3%)                      |         |
| Normally performed                  | 4 (10%)                | 0 (0%)                        |         |
| Never performed                     | 24 (80%)               | 27 (90%)                      |         |
| Speech therapy                      |                        |                               |         |
| Canceled                            | 1 (3.3%)               | 0 (0%)                        | 0.6     |
| Rescheduled                         | 2 (6.7%)               | 0 (0%)                        |         |
| Normally performed                  | 2 (6.7%)               | 1 (3%)                        |         |
| Never performed                     | 24 (80%)               | 27 (90%)                      |         |
| Psychotherapy                        |                        |                               |         |
| Canceled                            | 0 (0%)                 | 1 (3.3%)                      | 0.4     |
| Rescheduled                         | 0 (0%)                 | 1 (3.3%)                      |         |
| Performed using alternative methods | 4 (13.3%)              | 2 (6.7%)                      |         |
| Normally performed                  | 3 (10%)                | 1 (3.3%)                      |         |
| Never performed                     | 23 (76.7%)             | 25 (83.3%)                    |         |
| Overall impact of COVID-19 on PD care |                      |                               |         |
| No differences                      | 13 (43.3%)             | 5 (16.7%)                     | 0.02    |
| Some difficulties without real impact | 10 (33.3%)             | 7 (23.3%)                     |         |
| Mild impact                         | 6 (20%)                | 13 (43.3%)                    |         |
| Extremely negative impact           | 1 (3.3%)               | 5 (16.7%)                     |         |

Values are mean ± SD (range) or N (%). Between-group comparisons of continuous variables were performed using the Mann–Whitney U test whereas categorical variables were analyzed with Fisher’s exact test. Statistically significant comparisons are bold-typed.

Abbreviations: NGOs: non-governmental organizations; PD, Parkinson’s disease.

**Disclosures**

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