Covid and Depression: Examining the Effects of a Pandemic on SSRI Prescription Rates and PHQ Scores

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Background:
- Since the onset of COVID pandemic, there is an increased awareness on mental & behavioral health
- CDC found an increase in symptoms of anxiety or depressive disorder between Aug 2020-Feb 2021
  - Increase from 36.4% to 41.5% in adults (particularly among adults aged 18-29)[2]
- Early studies showed an increase in symptoms of anxiety or depressive disorders among adults, as well as increased SSRI prescription rates in England[1]

Hypothesis:
- PHQ scores and prescription rates of SSRI's increase in response to the onset of and surges throughout the COVID pandemic among RowanSOM Family Medicine patients

Materials and Methods:
- Retrospective chart review of RowanSOM FM patients prescribed SSRI's during the months of January, April, July, and November throughout 2019-2021
  - Pre-pandemic defined as anything prior to April 2020
  - Post-pandemic defined as any time including and after April 2020
- 623 patient charts qualified
  - Prescription rate calculated as number of patients prescribed SSRI/total visits that month
  - Compared prescription rates pre-pandemic and through different points of the pandemic
  - Also compared average PHQ-2 and PHQ-9 pre and post pandemic

Results
- Comparison of PHQ-2 and PHQ-9 scores revealed no significant difference on the average scores between pre pandemic data (233 subjects) versus post pandemic data (390 subjects) (**p-value >0.05**)
- Comparison of the proportion of patients with major depressive disorder (PHQ-2 > 3) revealed no significant difference between the pre pandemic group and the post pandemic group
- Relative increase in the average PHQ-2 score from April 2020 through Jan 2021
  - Borderline significant difference in average PHQ-2 during this isolated timeframe (**p-value = 0.059**)
  - On average, PHQ-2 scores in April 2020 was 1.24 compared to 2.0 for July 2020; 2.0 for November 2020; 1.86 for January 2021
- Observed a significant increase in the rate of antidepressants medications prescribed after July 2021 (**p-value = 1.6×10^{-9}**)
  - Corresponds to a drop in the PHQ-2 scores during same period
- Use of a logistic regression model found age to be an important predictor of PHQ-2 scores >3
  - Younger population more likely to have elevated PHQ-2 scores

Conclusion
- Based on early data analysis, we observed no significant trend in PHQ-9 scores
- Borderline significant spike in PHQ-2 scores around beginning of the second COVID surge (07/20)
- Anti-depressant prescription rates spiked between 07/21-11/21, with a corresponding drop in average PHQ-2 score pointing to more efficacious treatment with antidepressants
- Early demographic analysis showed increased risk of major depressive disorder (PHQ>3) in younger patients when compared to older patients
- More data collection and analysis is needed

FIGURE 1: Data table showing all the calculated Data

Month	Avg PHQ2	Avg PHQ9	prop of subjects with PHQ2 >= 3	prop subjects who took the PHQ9	Prescription Rate	Prescription Rate (%)
19_Jan	1.61	14.08	0.18	0.27	0.0150	1.49710786
19_Apr	1.40	11.78	0.29	0.35	0.0179	1.787592008
19_Jul	1.47	11.50	0.21	0.27	0.0158	1.579325197
19_Nov	1.60	7.69	0.23	0.34	0.0174	1.739452258
20_Jan	1.53	6.44	0.22	0.38	0.0153	1.526965562
20_Apr	1.24	10.25	0.22	0.24	0.0191	1.911314985
20_Jul	2.00	4.00	0.27	0.41	0.0114	1.14017438
20_Nov	2.00	5.89	0.32	0.36	0.0073	0.730140187
21_Jan	1.86	9.42	0.28	0.46	0.0137	1.369863014
21_Apr	1.25	7.23	0.22	0.42	0.0194	1.94102277
21_Jul	1.43	12.76	0.24	0.31	0.0195	1.947592068
21_Nov	0.83	8.91	0.10	0.35	0.0485	4.850474106

FIGURE 2 : Depiction of Average PHQ2 and PHQ3 scores compared pre- and post-pandemic

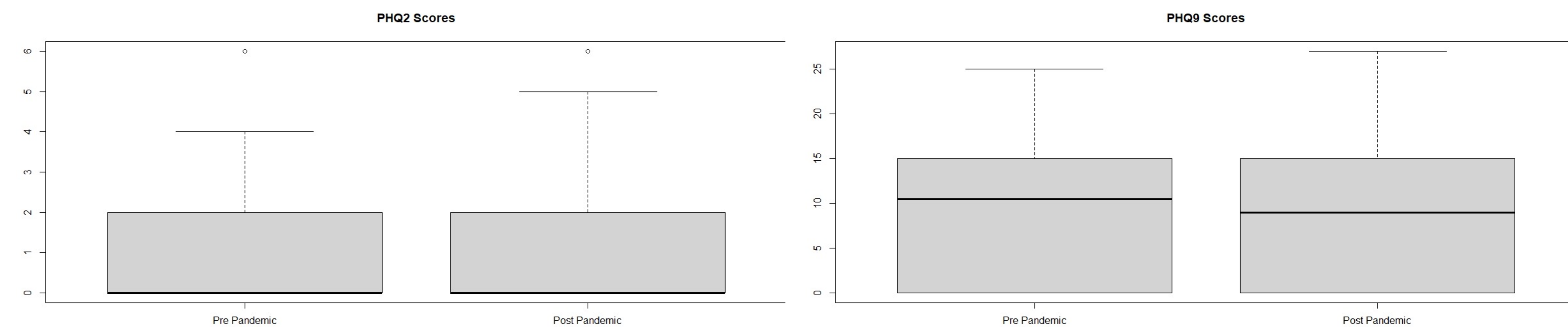**FIGURE 3: Graphs depicting Average PHQ2, Average PHQ9, Prescription Rate, and Proportion of patients with PH2>3**

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2. Vahratian A, Blumberg SJ, Terlizzi EP, Schiller JS. Symptoms of Anxiety or Depressive Disorder and Use of Mental Health Care Among Adults During the COVID-19 Pandemic — United States, August 2020–February 2021. MMWR Morb Mortal Wkly Rep 2021;70:490–494. DOI: http://dx.doi.org/10.15585/mmwr.mm7013e2external icon