



Health Care Utilization before and during the COVID-19 Pandemic in Patients with Epithelial Ovarian Cancer

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Background

- Cancer patients are at an increased risk of a severe course of COVID-19 disease if infected.
- To minimize COVID-19 exposure and to reduce COVID-related illnesses, the Centers for Disease Control and Prevention recommended adoption of telephonic and telehealth interactions with patients.
- It is not known whether any potential shift in telehealth care approaches during the pandemic was associated with changes in key patient outcomes in ovarian cancer patients.

Study objective

- To evaluate the impact of the pandemic on healthcare utilization and short-term safety outcomes in patients with ovarian cancer.

Methods

- This retrospective cohort study was conducted at Kaiser Permanente Southern California, an integrated healthcare delivery system.
- It included insured patients diagnosed with epithelial ovarian cancer between 01/01/2017-06/30/2021.
- Patients diagnosed with COVID-19 between cancer diagnosis and treatment initiation were excluded.
- March 4, 2020, was used as the cut-off to define pre-pandemic and pandemic periods based on the date of implementation of stay-at-home order in California.
- Healthcare utilization included the number of:
 - CA125, complete blood count, electrolytes, and creatinine tests for chemotherapy monitoring (per treatment cycle)
 - Office visits (per person-month)
 - Virtual visits (per person-month)
- Short-term safety outcomes included the number of:
 - Emergency room (ER) visits (per person-month)
 - Hospitalizations (per person-month) for any reasons
- Bivariate and multivariable negative binomial models were used to evaluate the association of the pandemic with healthcare utilization and short-term safety outcomes.

	Total (N=799)	Pre-Pandemic (N=581)	Pandemic (N=218)	P-value (crude)
Age at Diagnosis [Median (IQR) years]	62.5 (12.7)	63.1 (12.5)	61.0 (13.3)	0.03
Race/Ethnicity				0.11
Asian/Pacific Islander/Others	99 (12.4%)	63 (10.8%)	36 (16.5%)	
Non-Hispanic black	61 (7.6%)	42 (7.2%)	19 (8.7%)	
Hispanic	270 (33.8%)	197 (33.9%)	73 (33.5%)	
Non-Hispanic white	369 (46.2%)	279 (48.0%)	90 (41.3%)	
FIGO Stage				0.61
Stage I	220 (27.5%)	167 (28.7%)	53 (24.3%)	
Stage II	85 (10.6%)	59 (10.2%)	26 (11.9%)	
Stage III	316 (39.6%)	228 (39.2%)	88 (40.4%)	
Stage IV	178 (22.3%)	127 (21.9%)	51 (23.4%)	
Laboratory monitoring of chemotherapy* [Mean (SD)]				
CA125	5.5 (3.40)	5.4 (3.47)	5.8 (3.23)	0.20
CBC with differentials	2.0 (1.53)	2.0 (1.44)	2.1 (1.73)	0.59
Electrolytes	1.1 (1.53)	1.1 (1.44)	1.2 (1.73)	0.19
Creatinine	1.8 (1.40)	1.8 (1.26)	2.0 (1.70)	0.15
Office visits per person-month [Mean (SD)]	0.6 (0.6)	0.6 (0.6)	0.4 (0.5)	<0.01
Virtual visits per person-month [Mean (SD)]	0.2 (0.5)	0.2 (0.3)	0.4 (0.7)	<0.01
ER visits per person-month [Mean (SD)]	0.2 (0.5)	0.2 (0.5)	0.2 (0.5)	1.00
Hospitalizations per person-month [Mean (SD)]	0.4 (0.7)	0.4 (0.7)	0.3 (0.5)	<0.01

Notes: *Chemotherapy monitoring data available for 684 patients who received chemotherapy as first-course treatment

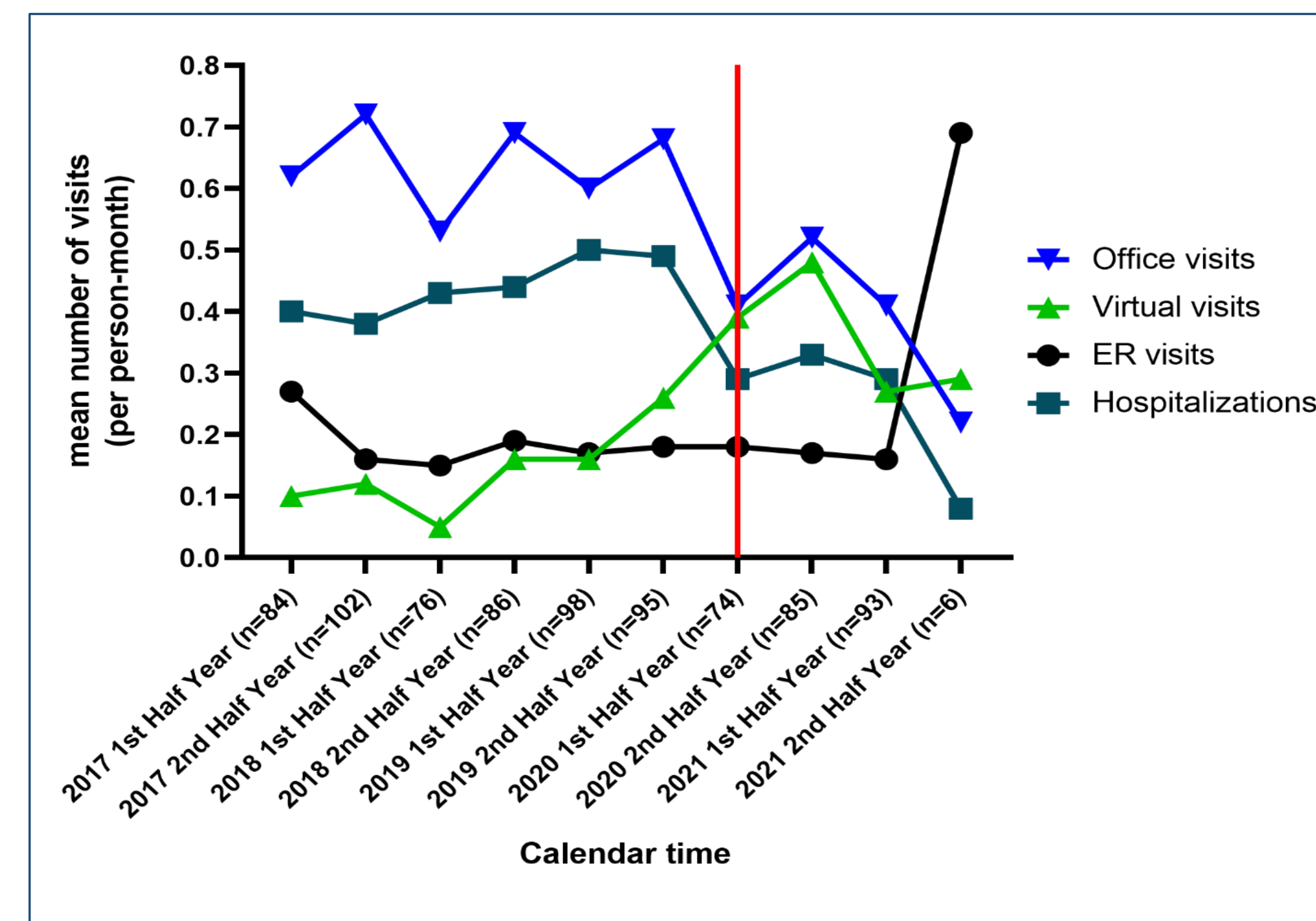
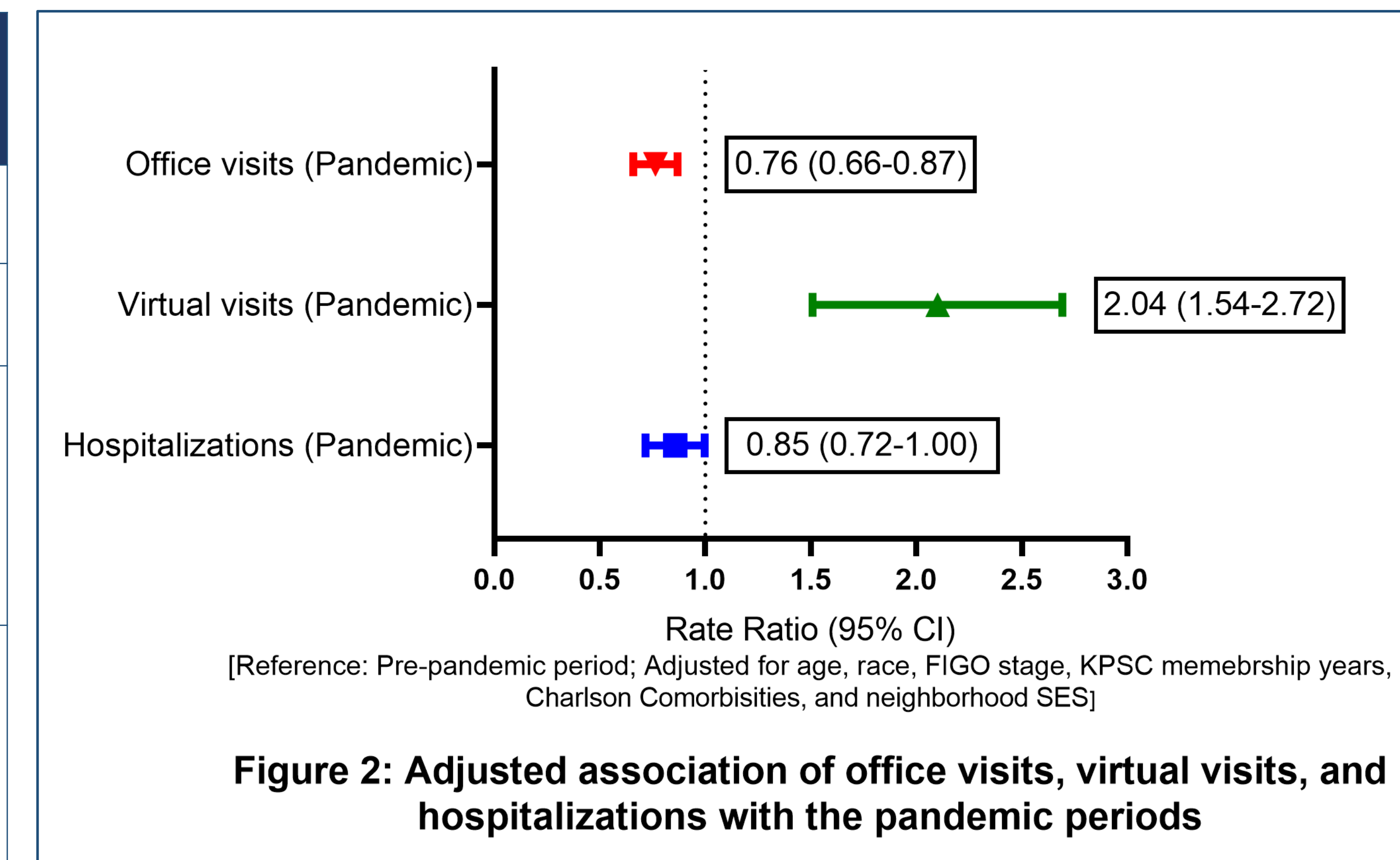


Figure 1: Distribution of office visits, virtual visits, ER visits, and hospitalizations before and after the advent of the COVID-19 pandemic.



Results

- 72.7% patients were diagnosed in the pre-pandemic period, 27.3% were diagnosed in the pandemic period.
- Patients in the pandemic period were 24% less likely to have office visits than patients in the pre-pandemic period [rate ratio (RR) (95%CI): 0.76 (0.66-0.87)], after adjusting for age, race/ethnicity, FIGO stage, neighborhood socioeconomic status, and prior length of healthcare membership.
- Patients in the pandemic period were twice as likely to have virtual visits than patients in the pre-pandemic period [adjusted-RR (95%CI): 2.04 (1.54-2.72)].
- The number of hospitalizations was slightly lower during the pandemic vs the pre-pandemic period [adjusted-RR (95%CI): 0.85 (0.72-1.00)].
- No differences in ER visits or laboratory monitoring were observed before and during the pandemic.

Conclusion

- A shift from office visits to virtual visits during the COVID-19 pandemic was observed in patients with epithelial ovarian cancer.
- However, no differences in chemotherapy monitoring and ER visits were observed by the pandemic periods.
- These findings provide some support that telehealth did not compromise care quality in ovarian cancer patients.

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