Patient-physician sex concordance and associations with treatment practices and cancer outcomes in a real-world population-based cohort

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Background

- The #MeToo movement has drawn necessary attention to the sex and gender inequities that permeate many relationships, including that of the patient and their physician
- Prior research has linked patient-physician sex discordance with inferior surgical and cardiac outcomes
- The impact of sex inequities in healthcare may be magnified in medical oncology, where patients and physicians often navigate life-limiting illnesses and intensive treatments

We examined cancer treatment practices and survival outcomes in sex-concordant vs. discordant patient-physician dyads.

Methods

A population-based, retrospective cohort study of adults diagnosed with stage II-IV colon or lung cancer between 2013 and 2020 in Alberta, Canada and referred to medical oncology.

Patient-physician dyads:

Sex-concordant: ♀♀ or ♂♂

Sex-discordant: ♀♂ or ♂♀

Study data: Patient demographic and clinical information from the Alberta Cancer Registry, physician-level demographics from the College of Physicians & Surgeons of Alberta database

Endpoints: Overall survival (OS), cancer-specific survival (CSS), systemic anti-cancer therapy (SACT) use, time to adjuvant SACT initiation

Analysis: Descriptive statistics for baseline characteristics; Kaplan-Meier methods for time-to-event data; multivariable Cox/logistic regression for associations; differences assessed using Pearson's χ^2, Wilcoxon rank sum, and log rank tests; propensity score matching for sex concordant vs discordant patients

Results

Table 1. Baseline characteristics by sex concordance, PSM cohort

PSM covariate	Overall, N = 8,192	Sex-concordant N = 4,096	Sex-discordant N = 4,096	P value	SMD
Sex				1.00	<0.001
Female	3,998 (49%)	1,999 (49%)	1,999 (49%)		
Male	4,194 (51%)	2,097 (51%)	2,097 (51%)		
Age at diagnosis, y				**0.04**	0.040
Mean ± SD	67 ± 12	67 ± 11	67 ± 12		
Median (Range)	68 (22, 96)	68 (22, 96)	68 (24, 96)		
Residence				**0.002**	0.068
Urban	6,614 (81%)	3,362 (82%)	3,252 (79%)		
Rural	1,578 (19%)	734 (18%)	844 (21%)		
Charlson comorbidity index				0.10	0.055
0	5,005 (61%)	2,458 (60%)	2,547 (62%)		
1	1,850 (23%)	971 (24%)	879 (21%)		
2	813 (10%)	405 (10%)	408 (10%)		
3+	524 (6%)	262 (6%)	262 (6%)		
Cancer site				0.79	0.006
Colon	3,654 (45%)	1,833 (45%)	1,821 (44%)		
Lung	4,538 (55%)	2,263 (55%)	2,275 (56%)		
Stage				**0.02**	0.064
II	1,539 (19%)	754 (18%)	785 (19%)		
III	2,884 (35%)	1,393 (34%)	1,491 (36%)		
IV	3,769 (46%)	1,949 (48%)	1,820 (44%)		

Table 2. Treatment patterns by patient-physician sex concordance

	All Patients	Patient-physician dyad		P value
		Sex-concordant	Sex-discordant	
Stage II-III only (N = 6,017)				
Adjuvant SACT use	1,434 (23.8%)	744 (24.5%)	690 (23.2%)	0.24
Median time to adjuvant SACT (range), wk	8.1 (1.3, 12.0)	8.1 (1.6, 12.0)	8.1 (1.3, 12.0)	0.57
Stage IV only (N = 6,016)				
SACT use	3,783 (62.9%)	1,881 (62.6%)	1,902 (63.2%)	0.62
Median time to SACT (range), wk	6.6 (0.4, 213.7)	6.7 (0.4, 181.4)	6.4 (0.4, 213.7)	0.24

Figure 1. Multivariable associations with overall survival, Cox regression, PSM cohort

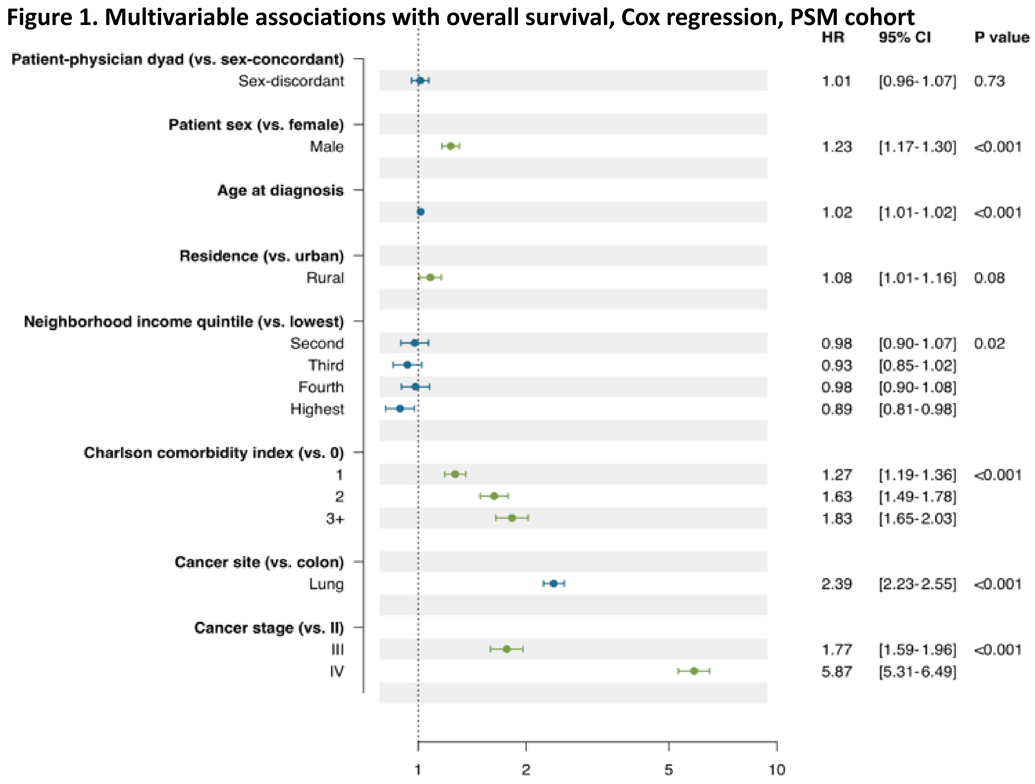

Figure 2. Overall survival by patient-physician sex concordance , PSM cohort

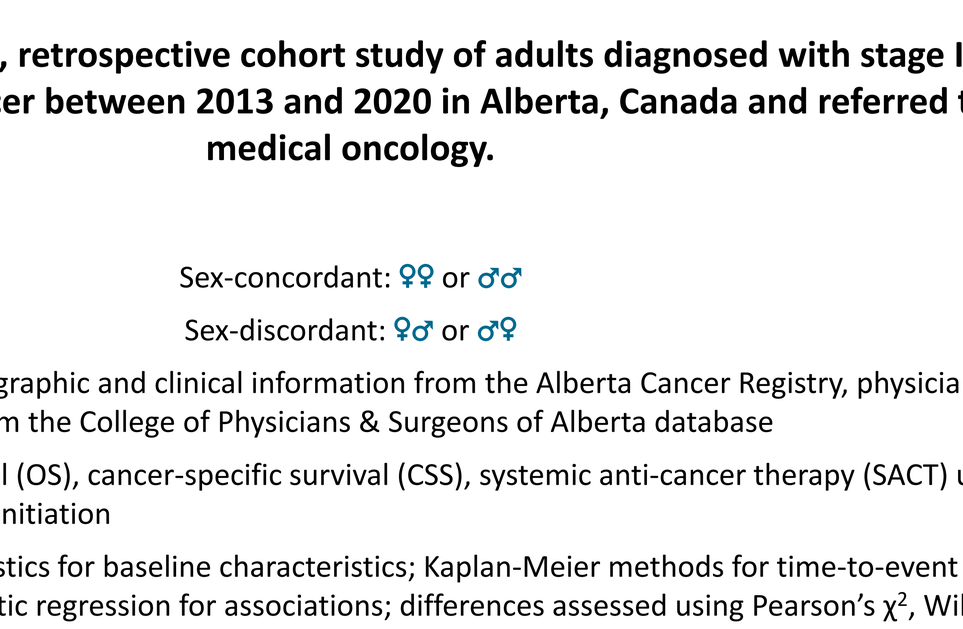

Figure 3. Cancer-specific survival by patient-physician sex concordance , PSM cohort

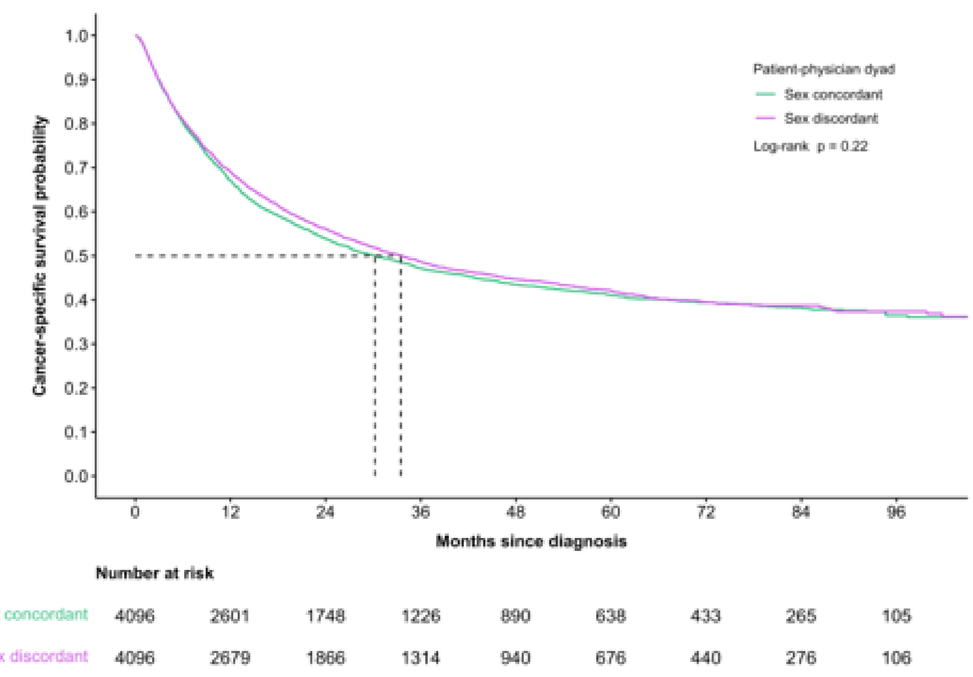

Table 2. Overall survival and cancer specific survival estimates by patient-physician sex concordance, PSM cohort

	All patients	Patient-physician dyad	
		Sex-concordant	Sex-discordant
Median OS (95% CI), mo	24.5 (23.1-25.8)	23.5 (21.9-25.3)	25.3 (23.8-27.4)
5-year OS (95% CI)	0.34 (0.33-0.35)	0.34 (0.32-0.35)	0.35 (0.33-0.37)
Median CSS (95% CI), mo	32.0 (29.8-34.4)	30.2 (27.3-33.9)	33.5 (30.6-36.6)
5-year CSS (95% CI)	0.41 (0.40-0.43)	0.41 (0.39-0.43)	0.42 (0.40-0.44)

Conclusions

- Sex concordance between patients and medical oncologists was not independently associated with differential SACT use, OS, or CSS.
- However, male patients treated by female physicians had worse outcomes vs. those treated by male physicians (OS HR 1.09 [95% CI 1.00-1.16], p = 0.048; CSS HR 1.10 [95% CI 1.01-1.19], p =0.02).

Cancer outcomes may be prone to the effects of sex bias in specific patient-physician relationships

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