

Comorbidities, Socioeconomic status and Colorectal cancer diagnostic route: a population-based study in Milan

Abstract

Background

Pre-existing chronic conditions (termed comorbidities) can influence cancer diagnosis and outcomes. The study aimed to examine variations in diagnostic pathways and outcomes in colorectal cancer (CRC) patients by comorbidity status and socio-demographic characteristics in the provinces of Milan and Lodi, Northern Italy.

Methods

A population-based cohort study using linked administrative health data from the Agency for Health Protection (ATS) of Milan was conducted on individuals diagnosed with CRC in 2014-2020. The year 2020 was analysed separately. We examined pathways to cancer diagnosis (screening, emergency presentation (EP), inpatient/outpatient visits), stage at diagnosis and short-term mortality (30 days and 1 year after diagnosis) by specific comorbidities and sociodemographic factors using multivariable logistic regression.

Results

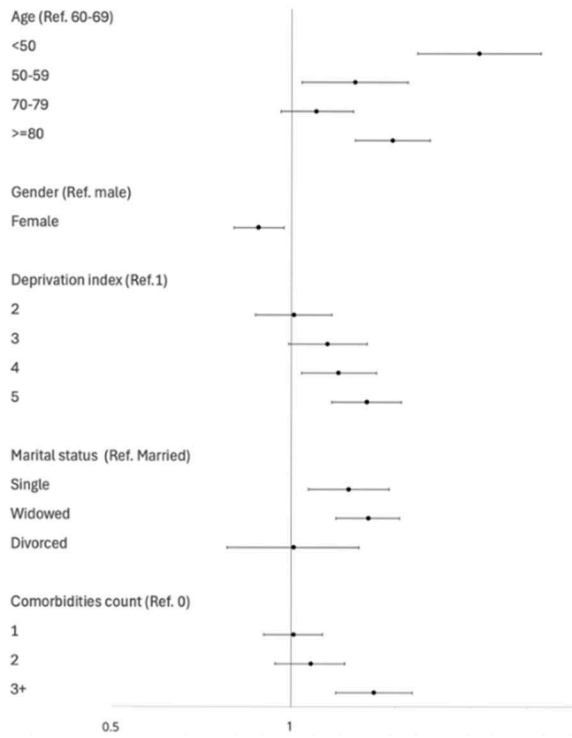
Among the 10,750 colon cancer and 3,707 rectal cancer patients, 44.6% and 57.6%, respectively, had at least one pre-existing comorbidity, most frequently hypertension (53.7% and 42.7%), cardiovascular disease (CVD, 23.6% and 18.2%) and diabetes (17.3% and 16.2%). Cancer diagnostic pathways included screening (8.4% colon and 9.5% rectal cancer patients), EP (35.6% and 22.6%) and inpatient/outpatient admission (56.1% and 67.8%). At multivariable logistic regression, patients with pre-existing cerebrovascular or neurological diseases had significantly higher odds of EP for CRC. In the multinomial logistic regression analysis, the odds of EP were significantly higher for patients aged <50 or ≥80 (vs 60-69), belonging to the highest deprivation group, being single and widowed (vs married) and having 3+ comorbidities. The odds of screen-detected CRC were lower for patients with at least one comorbidity (3+ vs 0 comorbidities: adjusted OR=0.64, 95% CI 0.45-0.91), for younger and older age groups, and for single or divorced (vs married) patients. 30-day, 6 months and one-year mortality were higher in colon cancer patients with EP vs inpatient/outpatient (aOR=3.09, 95% CI 2.47-3.87; aOR=2.06, 95% CI 1.80-2.35; aOR=2.03, 95% CI 1.80-2.29 respectively), independently of stage and socio-demographic factors. Short-term mortality was also higher for colon cancer patients with at least one comorbidity (vs no comorbidities). In comparison to previous years, the lockdown saw a significant increase in the number of EP (aOR=1.28, 95% CI 1.13-1.46) and a corresponding decrease in screening diagnoses (aOR=0.71, 95% CI 0.55-0.93).

Conclusions

Pre-existing comorbidities were associated with a lower likelihood of screening, higher risk of emergency CRC diagnosis and higher mortality. Tailored interventions might be needed to facilitate CRC screening, reducing emergency diagnoses and improving health outcomes for the large number of patients with chronic conditions.

COLON Adjusted			RECTUM Adjusted	
	EP (EP=1) (adjusted) OR (95% IC)	P value	EP (EP=1) (adjusted) OR (95% IC)	P value
Sex (Ref M)				
F	0.86 (0.78-0.95)	0.002	0.58 (0.32-1.04)	0.068
Age (Ref. 60-69)				
<50	2.92 (2.32-3.67)	<0.001	1.35 (0.46-3.97)	0.591
50-59	1.21 (1.00-1.47)	0.054	1.04 (0.42-2.58)	0.940
70-79	1.47 (1.29-1.69)	<0.001	0.58 (0.24-1.41)	0.229
>=80	2.06 (1.79-2.37)	<0.001	1.68 (0.77-3.66)	0.190
Deprivation index (Ref. 1)				
2	1.02 (0.88-1.18)	0.819	0.86 (0.40-1.83)	0.687
3	1.15 (1.00-1.34)	0.055	0.56 (0.24-1.33)	0.186
4	1.22 (1.06-1.40)	0.007	0.69 (0.30-1.58)	0.378
5	1.36 (1.19-1.54)	<0.001	0.48 (0.21-1.07)	0.074
Marital status (Ref. Married)				
Single	1.28 (1.10-1.49)	0.001	1.85 (0.84-4.08)	0.130
Widowed	1.35 (1.20-1.53)	<0.001	1.81 (0.85-3.86)	0.123
Divorced	1.13 (0.88-1.45)	0.355	1.85 (0.55-6.25)	0.325
Specific comorbidities (Ref 0)				
CVD	1.26 (1.13-1.41)	<0.001	0.62 (0.26-1.46)	0.271
Diabetes	1.11 (0.98-1.24)	0.096	0.58 (0.22-1.50)	0.259
Neurological diseases	1.67 (1.33-2.09)	<0.001	NA	NA
Genitourinary diseases	1.07 (0.85-1.34)	0.580	0.68 (0.09-5.10)	0.703
Cerebrovascular diseases	1.50 (1.23-1.82)	<0.001	1.39 (0.32-6.10)	0.663

Emergency presentation



Screening

