

Supplementary Table 1. Treatment received by cancer stage

Characteristics, no. (%)	ALL	Endoscopic removal	Surgery only	Surgery + RT	Surgery + Chemo	Surgery + CCRT	CCRT	Chemo only	RT only	No treatment	<i>P</i> value
No. of patients	100733	14376	38729	3546	23549	6373	862	2581	712	10005	
Clinical disease status											
Localized	37256	10833 (29.1)	17944 (48.2)	812 (2.2)	2992 (8)	1219 (3.3)	160 (0.4)	132 (0.4)	130 (0.3)	3034 (8.1)	<.0001
Non-disabled patients	29934	8654 (28.9)	14464 (48.3)	677 (2.3)	2453 (8.2)	1032 (3.4)	129 (0.4)	97 (0.3)	102 (0.3)	2326 (7.8)	
Disabled patients	7322	2179 (29.8)	3480 (47.5)	135 (1.8)	539 (7.4)	187 (2.6)	31 (0.4)	35 (0.5)	28 (0.4)	708 (9.7)	
Locoregional	42621	925 (2.2)	16632 (39)	2313 (5.4)	15447 (36.2)	4244 (10)	346 (0.8)	344 (0.8)	358 (0.8)	2012 (4.7)	<.0001
Non-disabled patients	34636	745 (2.2)	13339 (38.5)	1917 (5.5)	12755 (36.8)	3531 (10.2)	273 (0.8)	275 (0.8)	273 (0.8)	1528 (4.4)	
Disabled patients	7985	180 (2.3)	3293 (41.2)	396 (5)	2692 (33.7)	713 (8.9)	73 (0.9)	69 (0.9)	85 (1.1)	484 (6.1)	
Metastatic	11871	791 (6.7)	1717 (14.5)	164 (1.4)	3813 (32.1)	468 (3.9)	273 (2.3)	1960 (16.5)	139 (1.2)	2546 (21.4)	<.0001
Non-disabled patients	9387	642 (6.8)	1335 (14.2)	145 (1.5)	3119 (33.2)	397 (4.2)	223 (2.4)	1547 (16.5)	107 (1.1)	1872 (19.9)	
Disabled patients	2484	149 (6)	382 (15.4)	19 (0.8)	694 (27.9)	71 (2.9)	50 (2)	413 (16.6)	32 (1.3)	674 (27.1)	
Unknown	8985	1827 (20.3)	2436 (27.1)	257 (2.9)	1297 (14.4)	442 (4.9)	83 (0.9)	145 (1.6)	85 (0.9)	2413 (26.9)	<.0001
Non-disabled patients	7112	1486 (20.9)	1980 (27.8)	220 (3.1)	1082 (15.2)	379 (5.3)	66 (0.9)	104 (1.5)	75 (1.1)	1720 (24.2)	
Disabled patients	1873	341 (18.2)	456 (24.3)	37 (2)	215 (11.5)	63 (3.4)	17 (0.9)	41 (2.2)	10 (0.5)	693 (37)	

Current	4557 (31.3)	866 (29.5)	0.1255	196	670	581	227	41	6	11
Past	4045 (27.8)	830 (28.3)		159	671	535	234	48	6	7
No	5936 (40.8)	1242 (42.3)		256	986	796	352	66	7	21
Alcohol consumption										
Non-drinker	1581 (10.9)	423 (14.4)	<.0001	91	332	271	105	31	6	10
Social amount	12507 (86)	2418 (82.3)		507	1911	1579	674	124	13	28
Heavy drinker	450 (3.1)	97 (3.3)		13	84	62	34	0	0	1
Body mass index, mean (SD), kg/m ²										
□ 18.5	332 (2.3)	56 (1.9)	0.0036	16	40	33	21	1	1	0
18.5–23	4643 (31.9)	936 (31.9)		221	715	582	279	50	9	16
23–25	4087 (28.1)	781 (26.6)		144	637	507	221	40	5	8
25–30	5074 (34.9)	1049 (35.7)		205	844	701	270	61	4	13
>30	402 (2.8)	116 (3.9)		25	91	89	22	3	0	2

Supplementary Table 3. Overall mortality by disability

Overall mortality	Total no.	No. of death	PY	Incidence rate (per 1000 PY)	Crude HR (95% CI)	Adjusted HR 1 (95% CI)	Adjusted HR 2 (95% CI)	Adjusted HR 3 (95% CI)
Disability								
Non-disabled patients	81069	26908	524405.7	51.3	REF	REF	REF	REF
Disabled patients	19664	7808	110056.6	70.9	1.33(1.30-1.37)	1.277(1.244-1.31)	1.244(1.213-1.277)	1.241(1.209-1.273)
Disability severity								
Grade 1-3	6517	3181	33569.6	94.8	1.763(1.699-1.829)	1.692(1.630-1.757)	1.569(1.512-1.63)	1.527(1.471-1.586)
Grade 4-6	13147	4627	76487.0	60.5	1.141(1.106-1.177)	1.099(1.065-1.134)	1.095(1.061-1.13)	1.104(1.07-1.14)
Grade 1	986	553	4445.6	124.4	2.284(2.100-2.485)	2.127(1.954-2.315)	1.853(1.702-2.017)	1.759(1.616-1.915)
Grade 2	2402	1260	12001.1	105.0	1.943(1.836-2.056)	1.828(1.726-1.936)	1.731(1.634-1.833)	1.671(1.578-1.77)
Grade 3	3129	1368	17122.9	79.9	1.498(1.419-1.582)	1.475(1.397-1.558)	1.372(1.299-1.449)	1.353(1.281-1.429)
Grade 4	3531	1415	19612.9	72.1	1.352(1.282-1.426)	1.213(1.149-1.280)	1.202(1.139-1.269)	1.209(1.146-1.275)
Grade 5	4695	1704	26697.5	63.8	1.198(1.140-1.258)	1.112(1.058-1.168)	1.097(1.044-1.152)	1.104(1.051-1.16)
Grade 6	4921	1508	30176.7	50.0	0.951(0.903-1.002)	0.999(0.948-1.052)	1.011(0.96-1.065)	1.024(0.972-1.078)
Disabling conditions								
Physical								
Grade 1-3	2306	912	13346.8	68.3	1.300(1.217-1.388)	1.391(1.301-1.486)	1.311(1.227-1.401)	1.304(1.220-1.394)
Grade 4-6	8421	2675	50446.3	53.0	1.003(0.964-1.044)	1.028(0.988-1.070)	1.044(1.003-1.087)	1.062(1.020-1.105)
Communication								
Grade 1-3	1423	659	7671.7	85.9	1.616(1.496-1.746)	1.347(1.246-1.455)	1.245(1.152-1.346)	1.214(1.124-1.312)
Grade 4-6	3844	1562	21389.4	73.0	1.371(1.302-1.442)	1.157(1.099-1.218)	1.136(1.08-1.196)	1.137(1.080-1.196)
Brain								
Grade 1-3	1400	853	5896.0	144.7	2.602(2.430-2.786)	2.247(2.097-2.407)	1.947(1.817-2.086)	1.851(1.728-1.984)
Grade 4-6	613	275	3109.2	88.4	1.621(1.439-1.825)	1.534(1.361-1.728)	1.49(1.322-1.678)	1.461(1.297-1.646)
Mental								
Grade 1-3	463	219	2145.2	102.1	1.838(1.609-2.099)	2.337(2.041-2.675)	2.230(1.948-2.553)	2.172(1.897-2.487)
Grade 4-6	-	-	-	-	-	-	-	-
Cardiopulmonary								
Grade 1-3	385	212	1926.0	110.1	2.007(1.753-2.297)	1.938(1.692-2.219)	1.754(1.532-2.008)	1.691(1.477-1.937)
Grade 4-6	1	1	1.4	740.9	9.002(1.281-63.267)	11.422(1.614-80.857)	19.971(2.836-140.612)	16.501(2.343-116.217)
Others								
Grade 1-3	540	326	2584.0	126.2	2.298(2.06-2.563)	2.28(2.041-2.548)	2.434(2.179-2.719)	2.296(2.055-2.565)
Grade 4-6	268	114	1540.8	74.0	1.430(1.190-1.719)	1.580(1.314-1.899)	1.191(0.990-1.432)	1.144(0.951-1.376)

Adjusted HR 1: Adjusted for age, sex, comorbidity index, income, area of residence

Adjusted HR 2: MODEL 1 + adjusted for clinical disease status, type of surgery, and treatment, type of cancer

Adjusted HR 3: MODEL 2 + adjusted for smoking, alcohol, and body mass index

Supplementary Table 4. Colorectal cancer-specific mortality risk for patients with colorectal cancer of all stages.

Overall mortality	Total no.	No. of death	PY	Incidence rate (per 1000 PY)	Crude HR (95% CI)	Adjusted HR 1 (95% CI)	Adjusted HR 2 (95% CI)	Adjusted HR 3 (95% CI)
Disability								
Non-disabled patients	81069	19011	524405.7	36.3	REF	REF	REF	REF
Disabled patients	19664	5354	110056.6	48.6	1.256(1.219-1.295)	1.227(1.190-1.266)	1.192(1.156-1.229)	1.189(1.152-1.226)
Disability severity								
Grade 1-3	6517	2091	33569.6	62.3	1.585(1.515-1.658)	1.564(1.493-1.638)	1.430(1.366-1.498)	1.396(1.333-1.462)
Grade 4-6	13147	3263	76487.0	42.7	1.109(1.068-1.151)	1.084(1.044-1.125)	1.081(1.042-1.123)	1.089(1.049-1.131)
Grade 1	986	408	4445.6	91.8	2.288(2.074-2.523)	2.168(1.964-2.394)	1.831(1.659-2.022)	1.751(1.586-1.933)
Grade 2	2402	775	12001.1	64.6	1.628(1.515-1.749)	1.589(1.477-1.709)	1.502(1.397-1.616)	1.458(1.355-1.568)
Grade 3	3129	908	17122.9	53.0	1.366(1.278-1.460)	1.378(1.289-1.473)	1.259(1.177-1.346)	1.243(1.162-1.329)
Grade 4	3531	1004	19612.9	51.2	1.317(1.236-1.403)	1.204(1.130-1.283)	1.194(1.120-1.272)	1.198(1.124-1.277)
Grade 5	4695	1213	26697.5	45.4	1.170(1.104-1.240)	1.106(1.043-1.172)	1.092(1.030-1.157)	1.098(1.036-1.164)
Grade 6	4921	1046	30176.7	34.7	0.914(0.859-0.973)	0.971(0.912-1.033)	0.984(0.924-1.047)	0.995(0.935-1.059)
Disabling conditions								
Physical								
Grade 1-3	2306	649	13346.8	48.6	1.284(1.187-1.388)	1.383(1.278-1.497)	1.290(1.192-1.396)	1.284(1.186-1.389)
Grade 4-6	8421	1914	50446.3	37.9	0.991(0.946-1.039)	1.019(0.972-1.068)	1.042(0.994-1.093)	1.057(1.008-1.108)
Communication								
Grade 1-3	1423	446	7671.7	58.1	1.508(1.373-1.657)	1.283(1.167-1.409)	1.170(1.065-1.286)	1.144(1.041-1.257)
Grade 4-6	3844	1091	21389.4	51.0	1.315(1.237-1.398)	1.145(1.077-1.218)	1.115(1.048-1.185)	1.114(1.048-1.185)
Brain								
Grade 1-3	1400	601	5896.0	101.9	2.455(2.263-2.662)	2.269(2.090-2.463)	1.897(1.747-2.060)	1.809(1.666-1.965)
Grade 4-6	613	178	3109.2	57.3	1.416(1.222-1.641)	1.427(1.231-1.654)	1.369(1.181-1.588)	1.345(1.160-1.560)
Mental								
Grade 1-3	463	173	2145.2	80.6	1.935(1.666-2.248)	2.258(1.939-2.631)	2.074(1.781-2.417)	2.032(1.745-2.368)
Grade 4-6	-	-	-	-	-	-	-	-
Cardiopulmonary								
Grade 1-3	385	107	1926.0	55.6	1.364(1.128-1.649)	1.412(1.167-1.708)	1.257(1.039-1.520)	1.218(1.007-1.474)
Grade 4-6	1	1	1.4	740.9	10.339(1.496-71.479)	14.552(2.06-102.808)	40.45(5.691-287.489)	34.048(4.79-242.007)
Others								
Grade 1-3	540	115	2584.0	44.5	1.091(0.908-1.310)	1.155(0.960-1.389)	1.318(1.096-1.586)	1.255(1.043-1.510)
Grade 4-6	268	79	1540.8	51.3	1.398(1.121-1.743)	1.549(1.242-1.933)	1.167(0.935-1.456)	1.128(0.904-1.408)

Adjusted HR 1: Adjusted for age, sex, comorbidity index, income, area of residence

Adjusted HR 2: MODEL 1 + adjusted for clinical disease status, type of surgery, and treatment, type of cancer

Adjusted HR 3: MODEL 2 + adjusted for smoking, alcohol, and body mass index

Supplementary Table 5. Overall mortality risk for patients with colorectal cancer with local and locoregional who underwent surgery.

Overall mortality	Total no.	No. of death	PY	Incidence rate (per 1000 PY)	Crude HR (95% CI)	Adjusted HR 1 (95% CI)	Adjusted HR 2 (95% CI)	Adjusted HR 3 (95% CI)
Disability								
Non-disabled patients	59567	13842	422778.3	32.7	REF	REF	REF	REF
Disabled patients	13532	3669	86396.0	42.5	1.286(1.24-1.333)	1.227(1.183-1.274)	1.234(1.189-1.28)	1.238(1.193-1.284)
Disability severity								
Grade 1-3	4045	1400	24860.8	56.3	1.707(1.616-1.804)	1.624(1.535-1.718)	1.624(1.535-1.717)	1.561(1.475-1.651)
Grade 4-6	9487	2269	61535.3	36.9	1.116(1.067-1.166)	1.072(1.025-1.121)	1.086(1.038-1.135)	1.102(1.054-1.152)
Grade 1	539	191	3240.0	59.0	1.785(1.547-2.059)	1.657(1.435-1.913)	1.677(1.452-1.936)	1.555(1.347-1.795)
Grade 2	1522	624	8843.8	70.6	2.138(1.974-2.317)	1.974(1.819-2.141)	1.993(1.837-2.162)	1.902(1.753-2.063)
Grade 3	1984	585	12776.9	45.8	1.389(1.279-1.509)	1.364(1.255-1.482)	1.349(1.242-1.467)	1.317(1.211-1.431)
Grade 4	2459	671	15575.9	43.1	1.303(1.205-1.407)	1.169(1.082-1.264)	1.182(1.094-1.278)	1.195(1.106-1.292)
Grade 5	3342	827	21347.8	38.7	1.171(1.092-1.256)	1.098(1.024-1.178)	1.118(1.042-1.2)	1.132(1.055-1.214)
Grade 6	3686	771	24611.6	31.3	0.949(0.883-1.02)	0.978(0.909-1.052)	0.988(0.918-1.062)	1.007(0.936-1.083)
Disabling conditions								
Physical								
Grade 1-3	1601	429	10522.1	40.8	1.237(1.124-1.362)	1.311(1.190-1.444)	1.310(1.189-1.443)	1.280(1.162-1.410)
Grade 4-6	6204	1300	40908.7	31.8	0.961(0.908-1.018)	0.991(0.935-1.049)	1.009(0.953-1.069)	1.033(0.975-1.093)
Communication								
Grade 1-3	940	299	6084.8	49.1	1.494(1.332-1.675)	1.266(1.129-1.421)	1.270(1.132-1.425)	1.240(1.105-1.391)
Grade 4-6	2697	780	17115.8	45.6	1.380(1.284-1.484)	1.143(1.064-1.229)	1.145(1.065-1.231)	1.151(1.071-1.238)
Brain								
Grade 1-3	844	376	4638.3	81.1	2.451(2.213-2.716)	2.060(1.857-2.284)	2.014(1.816-2.233)	1.877(1.692-2.082)
Grade 4-6	438	144	2538.9	56.7	1.709(1.450-2.014)	1.573(1.334-1.854)	1.555(1.319-1.834)	1.532(1.299-1.806)
Mental								
Grade 1-3	281	86	1607.6	53.5	1.603(1.297-1.982)	2.043(1.648-2.533)	2.016(1.626-2.499)	1.955(1.577-2.423)
Grade 4-6	-	-	-	-	-	-	-	-
Others								
Grade 1-3	379	210	2007.9	104.6	3.182(2.777-3.647)	3.040(2.647-3.493)	3.224(2.807-3.704)	2.965(2.581-3.407)
Grade 4-6	148	45	971.9	46.3	1.413(1.054-1.893)	1.787(1.333-2.395)	1.974(1.473-2.647)	1.836(1.369-2.462)

Adjusted HR 1: Adjusted for age, sex, comorbidity index, income, area of residence

Adjusted HR 2: MODEL 1 + adjusted for clinical disease status, type of surgery, and treatment, type of cancer

Adjusted HR 3: MODEL 2 + adjusted for smoking, alcohol, and body mass index

Supplementary Table 6. Colon cancer-specific mortality risk for patients with colon cancer with local and locoregional who underwent surgery.

Overall mortality	Total no.	No. of death	PY	Incidence rate (per 1000 PY)	Crude HR (95% CI)	Adjusted HR 1 (95% CI)	Adjusted HR 2 (95% CI)	Adjusted HR 3 (95% CI)
Disability								
Non-disabled patients	59567	8024	422778.3	19.0	REF	REF	REF	REF
Disabled patients	13532	2021	86396.0	23.4	1.176(1.12-1.235)	1.154(1.098-1.212)	1.171(1.114-1.23)	1.174(1.118-1.234)
Disability severity								
Grade 1-3	4045	733	24860.8	29.5	1.483(1.375-1.599)	1.466(1.357-1.584)	1.453(1.345-1.569)	1.421(1.315-1.535)
Grade 4-6	9487	1288	61535.3	20.9	1.053(0.993-1.117)	1.033(0.974-1.096)	1.059(0.998-1.123)	1.072(1.011-1.138)
Grade 1	539	116	3240.0	35.8	1.787(1.488-2.147)	1.711(1.422-2.057)	1.698(1.411-2.042)	1.626(1.352-1.956)
Grade 2	1522	295	8843.8	33.4	1.657(1.475-1.861)	1.619(1.439-1.821)	1.638(1.456-1.842)	1.594(1.417-1.793)
Grade 3	1984	322	12776.9	25.2	1.281(1.146-1.432)	1.292(1.155-1.446)	1.260(1.127-1.410)	1.244(1.112-1.392)
Grade 4	2459	392	15575.9	25.2	1.259(1.138-1.394)	1.162(1.049-1.286)	1.181(1.067-1.308)	1.196(1.080-1.324)
Grade 5	3342	476	21347.8	22.3	1.116(1.017-1.224)	1.070(0.975-1.174)	1.104(1.006-1.212)	1.117(1.018-1.226)
Grade 6	3686	420	24611.6	17.1	0.865(0.784-0.954)	0.906(0.822-1.000)	0.927(0.840-1.023)	0.940(0.852-1.038)
Disabling conditions								
Physical								
Grade 1-3	1601	251	10522.1	23.9	1.217(1.073-1.380)	1.303(1.148-1.479)	1.303(1.148-1.479)	1.283(1.131-1.457)
Grade 4-6	6204	756	40908.7	18.5	0.931(0.864-1.003)	0.961(0.891-1.035)	0.995(0.923-1.072)	1.013(0.940-1.092)
Communication								
Grade 1-3	940	166	6084.8	27.3	1.397(1.198-1.629)	1.220(1.046-1.424)	1.211(1.038-1.413)	1.192(1.022-1.391)
Grade 4-6	2697	434	17115.8	25.4	1.274(1.157-1.404)	1.108(1.006-1.221)	1.113(1.010-1.226)	1.121(1.018-1.235)
Brain								
Grade 1-3	844	210	4638.3	45.3	2.224(1.940-2.550)	2.076(1.808-2.384)	1.938(1.688-2.226)	1.873(1.630-2.151)
Grade 4-6	438	75	2538.9	29.5	1.438(1.146-1.805)	1.453(1.156-1.824)	1.420(1.131-1.784)	1.413(1.124-1.774)
Mental								
Grade 1-3	281	56	1607.6	34.8	1.659(1.276-2.158)	1.848(1.415-2.414)	1.811(1.387-2.365)	1.779(1.362-2.323)
Grade 4-6	-	-	-	-	-	-	-	-
Others								
Grade 1-3	379	50	2007.9	24.9	1.221(0.925-1.613)	1.297(0.979-1.716)	1.459(1.102-1.931)	1.392(1.051-1.843)
Grade 4-6	148	23	971.9	23.7	1.229(0.816-1.851)	1.530(1.016-2.305)	1.775(1.178-2.674)	1.720(1.141-2.592)

Adjusted HR 1: Adjusted for age, sex, comorbidity index, income, area of residence

Adjusted HR 2: MODEL 1 + adjusted for clinical disease status, type of surgery, and treatment, type of cancer

Adjusted HR 3: MODEL 2 + adjusted for smoking, alcohol, and body mass index