

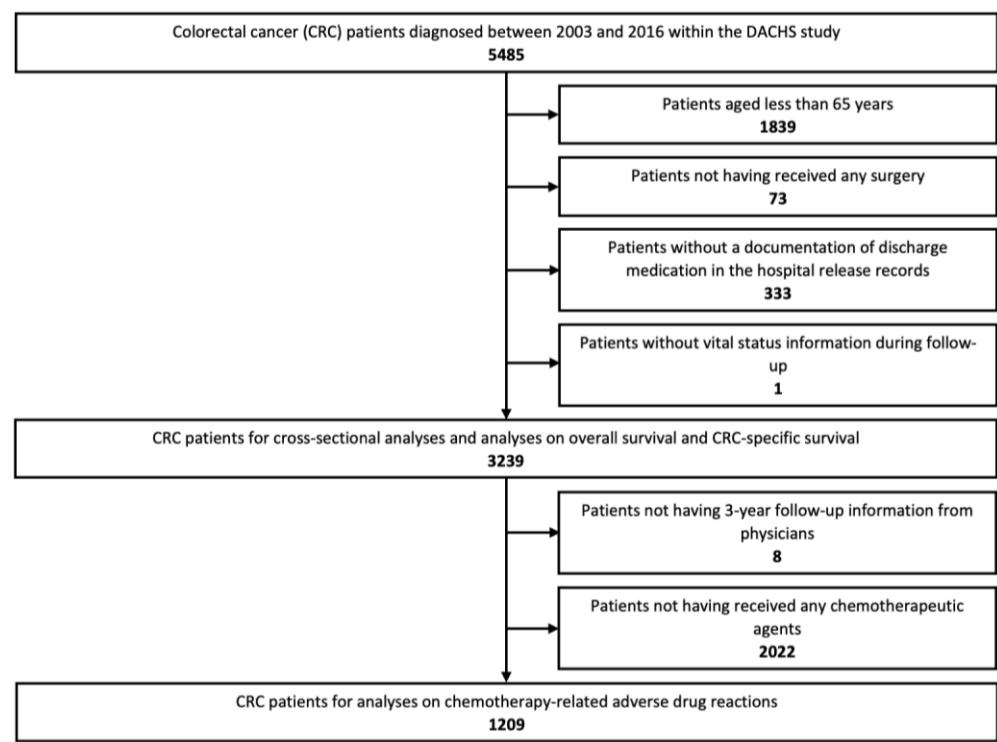
Supplementary Appendix to Article

“Association of co-medication quality with chemotherapy-related adverse drug reactions and survival in older colorectal cancer patients”

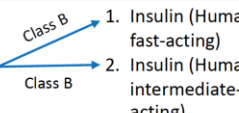
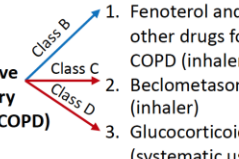
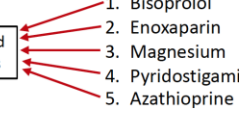
Table of Contents

Appendix Figure A1. Flow chart describing the study population	2
Appendix Figure A2. Case example showing how PIM use, underuse, overuse and the total FORTA score were calculated.....	3
Appendix Figure A3. Distribution of FORTA score of the study population	4
Appendix Table A1. The associations of total co-medication quality (as assessed by the FORTA score), PIM use, medication underuse and overuse with up to 5-year all-cause mortality in older CRC patients (Stratified by chemotherapy).....	5
Appendix Table A2. The associations of total co-medication quality (as assessed by the FORTA score), PIM use, medication underuse and overuse with up to 5-year overall survival (OS) in older CRC patients (Stratified by tumor location).....	6
Appendix Table A3. The associations of total co-medication quality (as assessed by the FORTA score), PIM use, medication underuse and overuse with up to 5-year overall survival (OS) in older CRC patients (Stratified by tumor stage)	7
Appendix Table A4. The associations of total co-medication quality (as assessed by the FORTA score), PIM use, medication underuse and overuse with up to 5-year overall survival (OS) in older CRC patients (Stratified by functional status).....	8
Appendix Table A5. The associations of total co-medication quality (as assessed by the FORTA score), PIM use, medication underuse and overuse with up to 5-year overall survival (OS) in older CRC patients (Stratified by age)	9
Appendix Table A6. The association of total co-medication quality (as assessed by the FORTA score), PIM use, medication underuse and overuse with chemotherapy-related hematological, cardiac, neurological, and gastrointestinal adverse drug reactions (ADRs) in older CRC patients.....	10

Appendix Figure A1. Flow chart describing the study population



Appendix Figure A2. Case example showing how PIM use, underuse, overuse and the total FORTA score were calculated

Diagnoses ^a	Medications ^a	PIM use	Underuse	Overuse	FORTA score
Diabetes mellitus	 1. Insulin (Human, fast-acting) 2. Insulin (Human, intermediate-acting)	-	-	-	Total FORTA score for this participant = 2+2+1+1 = 6
Chronic obstructive pulmonary disease (COPD)	 1. Fenoterol and other drugs for COPD (inhaler) 2. Beclometasone (inhaler) 3. Glucocorticoids (systematic use)	1 class C drug: 2 points 1 class D drug: 2 points	-	-	
Pain-related diagnosis ^b	No analgesics	-	No analgesics for pain-related diagnosis: 1 point	-	
No related diagnoses	 1. Bisoprolol 2. Enoxaparin 3. Magnesium 4. Pyridostigamine 5. Azathioprine	-	-	No related diagnoses for bisoprolol (1 point), enoxaparin (short-term use after CRC surgery), magnesium (supplement), pyridostigamine, azathioprine (might for myasthenia gravis but not within the scope of FORTA list)	

^a Information on diagnoses and medications was collected from a self-reported questionnaire and the discharge letter.

^b Pain-related diagnosis was defined as pain, gout, arthrosis, arthritis, migraine, rheumatism, rheumatoid arthritis, kidney stone, and gall stone in this study.

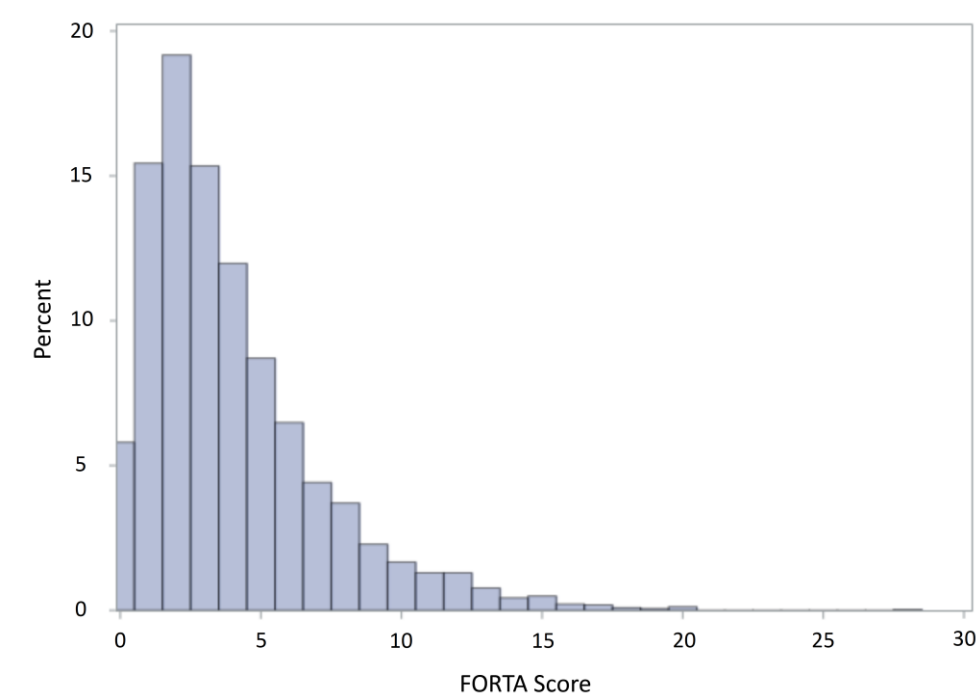
Commented [SB1]: For the 3 Class B drugs, please add in the FORTA column each time: 1 Class B (0 points)

Commented [SB2]: In underuse box, please change text to "No analgesic drug for pain-related diagnosis -> 1 point"

Commented [SB3]: In the box for overuse, please write one bullet point for each drug.

1. Bisoprolol -> No related diagnosis although the FORTA list includes potential diagnoses for this drug (1 point)
2. Enoxaparin -> For short-term use only after colorectal cancer surgery (0 point)
3. Magnesium -> Supplement, not judged by FORTA (0 point)
4. Pyridostigamine and Azathioprine -> Might be indicated for myasthenia gravis but the FORTA list does not list this indication and does not rate these drugs (0 point)

Appendix Figure A3. Distribution of FORTA score of the study population



Appendix Table A1. The associations of total co-medication quality (as assessed by the FORTA score), PIM use, medication underuse and overuse with up to 5-year all-cause mortality in older CRC patients (Stratified by chemotherapy)

Variables	No Chemotherapy			Chemotherapy		
	N _{total}	N _{cases} (%)	Model 3 ^a OR [95% CI]	N _{total}	N _{cases} (%)	Model 3 ^a OR [95% CI]
FORTA score						
Per 1 point	-	-	1.04 [0.99-1.09]	-	-	1.14 [1.06-1.22]
0-1	394	58 (14.7)	Ref	294	98 (33.3)	Ref
2-3	653	145 (22.2)	1.47 [0.99-2.18]	465	169 (36.3)	1.09 [0.75-1.59]
4-6	578	203 (35.1)	1.88 [1.24-2.86]	301	149 (49.5)	1.91 [1.21-2.99]
≥7	402	166 (41.3)	2.05 [1.23-3.42]	149	80 (53.7)	2.67 [1.45-4.93]
PIM use						
0	892	182 (20.4)	Ref	643	233 (36.2)	Ref
2	533	161 (30.2)	1.28 [0.93-1.76]	311	122 (39.2)	1.21 [0.84-1.74]
≥4	602	229 (38.0)	1.35 [0.94-1.95]	255	141 (55.3)	2.98 [1.86-4.78]
Underuse						
0	1006	243 (24.2)	Ref	656	247 (37.7)	Ref
1	641	179 (27.9)	1.02 [0.77-1.35]	367	165 (45.0)	1.12 [0.81-1.55]
≥2	380	150 (39.5)	1.12 [0.78-1.61]	186	84 (45.2)	0.97 [0.61-1.53]
Overuse						
0	669	176 (26.3)	Ref	408	157 (38.5)	Ref
1	790	216 (27.3)	0.96 [0.72-1.27]	470	188 (40.0)	1.05 [0.76-1.45]
2	379	114 (30.1)	1.08 [0.76-1.51]	225	104 (46.2)	1.40 [0.94-2.07]
≥3	189	66 (34.9)	1.31 [0.86-1.99]	106	47 (44.3)	1.24 [0.74-2.07]

Values in bold are statistically significant (p<0.05)

Abbreviations: CI, confidence interval; OR, odds ratio.

^a Adjusted for age, sex, tumor stage, tumor location, year of CRC diagnosis, year of schooling, smoking status, BMI, lifetime physical activity, lifetime alcohol consumption, red meat consumption, processed meat consumption, functional status, and comorbidity.

Appendix Table A2. The associations of total co-medication quality (as assessed by the FORTA score), PIM use, medication underuse and overuse with up to 5-year overall survival (OS) in older CRC patients (Stratified by tumor location)

Variables	Colon			Rectum		
	N _{total}	N _{cases} (%)	Model 3 ^a HR [95% CI]	N _{total}	N _{cases} (%)	Model 3 ^a HR [95% CI]
FORTA score						
Per 1 point	-	-	1.03 [0.99-1.07]	-	-	1.10 [1.05-1.15]
0-1	417	103 (24.7)	Ref	271	53 (19.6)	Ref
2-3	715	199 (27.8)	1.03 [0.80-1.33]	403	115 (28.5)	1.39 [0.98-1.96]
4-6	580	238 (41.0)	1.28 [0.97-1.69]	300	114 (38.0)	1.81 [1.25-2.62]
≥7	376	162 (43.1)	1.46 [1.03-2.06]	177	86 (48.6)	2.73 [1.72-4.35]
PIM use						
0	952	265 (27.8)	Ref	583	150 (25.7)	Ref
2	561	194 (34.6)	1.15 [0.94-1.43]	283	89 (31.5)	1.03 [0.76-1.39]
≥4	575	243 (42.3)	1.36 [1.06-1.73]	285	129 (45.3)	1.54 [1.09-2.16]
Underuse						
0	1028	314 (30.5)	Ref	635	177 (27.9)	Ref
1	672	236 (35.1)	0.97 [0.81-1.17]	336	108 (32.1)	1.14 [0.89-1.48]
≥2	388	152 (39.2)	0.83 [0.64-1.07]	180	83 (46.1)	1.71 [1.22-2.39]
Overuse						
0	702	226 (32.2)	Ref	376	107 (28.5)	Ref
1	810	264 (32.6)	0.89 [0.74-1.07]	452	142 (31.4)	1.27 [0.97-1.66]
2	400	140 (35.0)	0.96 [0.77-1.20]	204	78 (38.2)	1.57 [1.15-2.15]
≥3	176	72 (40.9)	1.20 [0.91-1.58]	119	41 (34.5)	1.49 [1.01-2.20]

Values in bold are statistically significant (p<0.05)

Abbreviations: CI, confidence interval; HR, hazard ratio.

^a Adjusted for age, sex, tumor stage, year of CRC diagnosis, neoadjuvant/adjuvant chemotherapy, year of schooling, smoking status, BMI, lifetime physical activity, lifetime alcohol consumption, red meat consumption, processed meat consumption, functional status, and comorbidity.

Appendix Table A3. The associations of total co-medication quality (as assessed by the FORTA score), PIM use, medication underuse and overuse with up to 5-year overall survival (OS) in older CRC patients (Stratified by tumor stage)

Variables	Stage I and II			Stage III			Stage IV		
	Ntotal	Ncases (%)	Model 3 ^a HR [95% CI]	Ntotal	Ncases (%)	Model 3 ^a HR [95% CI]	Ntotal	Ncases (%)	Model 3 ^a HR [95% CI]
FORTA score									
Per 1 point	-	-	1.04 [0.99-1.08]	-	-	1.05 [0.99-1.10]	-	-	1.08 [1.01-1.15]
0-1	399	45 (11.3)	Ref	207	51 (24.6)	Ref	81	60 (74.1)	Ref
2-3	620	96 (15.5)	1.31 [0.91-1.90]	348	107 (30.8)	1.25 [0.88-1.77]	143	108 (75.5)	0.89 [0.62-1.28]
4-6	485	128 (26.4)	1.82 [1.25-2.67]	263	119 (45.3)	1.56 [1.06-2.30]	122	102 (83.6)	1.10 [0.73-1.63]
≥7	341	110 (32.3)	1.83 [1.17-2.88]	155	86 (55.5)	2.03 [1.25-3.30]	55	51 (92.7)	1.79 [1.02-3.15]
PIM use									
0	862	124 (14.4)	Ref	467	139 (29.8)	Ref	197	150 (76.1)	Ref
2	473	100 (21.1)	1.24 [0.92-1.66]	253	93 (36.8)	1.25 [0.93-1.68]	110	87 (79.1)	0.94 [0.68-1.30]
≥4	510	155 (30.4)	1.50 [1.09-2.08]	253	131 (51.8)	1.42 [0.99-2.02]	94	84 (89.4)	1.33 [0.91-1.93]
Underuse									
0	920	157 (17.1)	Ref	543	181 (33.3)	Ref	193	150 (77.7)	Ref
1	594	125 (21.0)	1.09 [0.85-1.41]	277	113 (40.8)	1.11 [0.86-1.43]	129	105 (81.4)	0.91 [0.69-1.21]
≥2	331	97 (29.3)	1.21 [0.88-1.66]	153	69 (45.1)	0.95 [0.66-1.38]	79	66 (83.5)	0.98 [0.66-1.43]
Overuse									
0	640	131 (20.5)	Ref	312	105 (33.7)	Ref	121	95 (78.5)	Ref
1	715	137 (19.2)	0.91 [0.70-1.17]	374	139 (37.2)	1.21 [0.92-1.58]	165	127 (77.0)	0.87 [0.65-1.17]
2	332	73 (22.0)	1.04 [0.77-1.40]	189	76 (40.2)	1.28 [0.93-1.76]	78	67 (85.9)	1.03 [0.73-1.43]
≥3	158	38 (24.1)	1.09 [0.75-1.59]	98	43 (43.9)	1.61 [1.10-2.34]	37	32 (86.5)	1.22 [0.78-1.89]

Values in bold are statistically significant (p<0.05)

Abbreviations: CI, confidence interval; HR, hazard ratio.

^a Adjusted for age, sex, tumor location, year of CRC diagnosis, neoadjuvant/adjuvant chemotherapy, year of schooling, smoking status, BMI, lifetime physical activity, lifetime alcohol consumption, red meat consumption, processed meat consumption, functional status, and comorbidity.

Appendix Table A4. The associations of total co-medication quality (as assessed by the FORTA score), PIM use, medication underuse and overuse with up to 5-year overall survival (OS) in older CRC patients (Stratified by functional status)

Variables	Excellent			Fair			Poor		
	Ntotal	Ncases (%)	Model 3 ^a HR [95% CI]	Ntotal	Ncases (%)	Model 3 ^a HR [95% CI]	Ntotal	Ncases (%)	Model 3 ^a HR [95% CI]
FORTA score									
Per 1 point	-	-	1.05 [0.95-1.17]	-	-	1.06 [1.00-1.13]	-	-	1.04 [0.99-1.08]
0-1	154	28 (18.2)	Ref	226	53 (23.5)	Ref	127	29 (22.8)	Ref
2-3	216	48 (22.2)	1.33 [0.77-2.29]	324	93 (28.7)	1.43 [0.98-2.08]	240	76 (31.7)	1.34 [0.85-2.12]
4-6	104	31 (29.8)	1.94 [0.97-3.90]	222	72 (32.4)	1.49 [0.95-2.33]	276	143 (51.8)	1.98 [1.27-3.09]
≥7	38	11 (29.0)	2.00 [0.68-5.85]	114	41 (36.0)	1.73 [0.98-3.07]	227	113 (49.8)	2.18 [1.30-3.66]
PIM use									
0	317	65 (20.5)	Ref	486	123 (25.3)	Ref	314	103 (32.8)	Ref
2	114	28 (24.6)	1.20 [0.69-2.11]	211	67 (31.7)	1.38 [0.96-1.98]	235	98 (41.7)	1.20 [0.88-1.64]
≥4	81	25 (30.9)	1.89 [0.94-3.80]	189	69 (36.5)	1.55 [1.02-2.37]	321	160 (49.8)	1.36 [0.96-1.93]
Underuse									
0	309	67 (21.7)	Ref	485	139 (28.7)	Ref	392	142 (36.2)	Ref
1	143	34 (23.8)	1.09 [0.77-1.76]	271	84 (31.0)	0.96 [0.71-1.29]	275	109 (39.6)	1.04 [0.79-1.36]
≥2	60	17 (28.3)	1.27 [0.58-2.78]	130	36 (27.7)	0.89 [0.55-1.44]	203	110 (54.2)	1.32 [0.93-1.85]
Overuse									
0	150	37 (24.7)	Ref	290	80 (27.6)	Ref	285	102 (35.8)	Ref
1	235	48 (20.4)	0.94 [0.57-1.56]	343	105 (30.6)	0.96 [0.70-1.32]	320	133 (41.6)	0.98 [0.75-1.29]
2	92	23 (25.0)	1.00 [0.56-1.80]	171	47 (27.5)	0.92 [0.62-1.37]	172	85 (49.4)	1.48 [1.09-2.01]
≥3	35	10 (28.6)	1.27 [0.57-2.87]	82	27 (32.9)	1.48 [0.93-2.36]	93	41 (44.1)	1.29 [0.88-1.89]

Values in bold are statistically significant (p<0.05)

Abbreviations: CI, confidence interval; HR, hazard ratio.

^a Adjusted for age, sex, tumor stage, tumor location, year of CRC diagnosis, neoadjuvant/adjuvant chemotherapy, year of schooling, smoking status, BMI, lifetime physical activity, lifetime alcohol consumption, red meat consumption, processed meat consumption, and comorbidity.

Appendix Table A5. The associations of total co-medication quality (as assessed by the FORTA score), PIM use, medication underuse and overuse with up to 5-year overall survival (OS) in older CRC patients (Stratified by age)

Variables	65-74 Years			≥ 75 years		
	N _{total}	N _{cases} (%)	Model 3 ^a HR [95% CI]	N _{total}	N _{cases} (%)	Model 3 ^a HR [95% CI]
FORTA score						
Per 1 point	-	-	1.07 [1.02-1.12]	-	-	1.05 [1.02-1.09]
0-1	411	89 (21.7)	Ref	277	67 (24.2)	Ref
2-3	649	146 (22.5)	1.03 [0.77-1.36]	469	168 (35.8)	1.43 [1.06-1.92]
4-6	402	132 (32.8)	1.52 [1.11-2.09]	478	220 (46.0)	1.58 [1.16-2.15]
≥7	190	70 (36.8)	2.02 [1.32-3.11]	363	178 (49.0)	1.93 [1.34-2.77]
PIM use						
0	897	210 (23.4)	Ref	638	205 (32.1)	Ref
2	409	103 (25.2)	1.13 [0.88-1.47]	435	180 (41.4)	1.18 [0.93-1.48]
≥4	346	124 (35.8)	1.59 [1.18-2.13]	514	248 (48.3)	1.40 [1.08-1.82]
Underuse						
0	880	204 (23.2)	Ref	783	287 (36.7)	Ref
1	524	158 (30.2)	1.15 [0.92-1.44]	484	186 (38.4)	0.92 [0.76-1.12]
≥2	248	75 (30.2)	0.98 [0.70-1.38]	320	160 (50.0)	1.11 [0.86-1.43]
Overuse						
0	574	149 (26.0)	Ref	504	184 (36.5)	Ref
1	676	169 (25.0)	0.90 [0.72-1.14]	586	237 (40.4)	1.14 [0.93-1.40]
2	281	83 (29.5)	1.17 [0.88-1.56]	323	135 (41.8)	1.17 [0.93-1.48]
≥3	121	36 (29.8)	1.22 [0.83-1.80]	174	77 (44.3)	1.41 [1.06-1.86]

Values in bold are statistically significant (p<0.05)

Abbreviations: CI, confidence interval; HR, hazard ratio.

^a Adjusted for sex, tumor stage, tumor location, year of CRC diagnosis, neoadjuvant/adjuvant chemotherapy, year of schooling, smoking status, BMI, lifetime physical activity, lifetime alcohol consumption, red meat consumption, processed meat consumption, functional status, and comorbidity.

Appendix Table A6. The association of total co-medication quality (as assessed by the FORTA score), PIM use, medication underuse and overuse with chemotherapy-related hematological, cardiac, neurological, and gastrointestinal adverse drug reactions (ADRs) in older CRC patients

Variables	Hematological ADRs				
	N _{total}	N _{With ADR} (%)	Model 1 ^a OR [95%CI]	Model 2 ^b OR [95%CI]	Model 3 ^c OR [95%CI]
FORTA score					
Per 1 point	-	-	0.96 [0.88-1.05]	0.94 [0.86-1.04]	0.99 [0.87-1.13]
0-1	233	19 (8.2)	Ref	Ref	Ref
2-3	364	35 (9.6)	1.26 [0.70-2.27]	1.16 [0.63-2.11]	1.25 [0.65-2.39]
4-6	239	27 (11.3)	1.56 [0.84-2.90]	1.33 [0.70-2.53]	1.59 [0.73-3.43]
≥7	125	6 (4.8)	0.64 [0.25-1.65]	0.58 [0.22-1.53]	0.94 [0.28-3.13]
PIM use					
0	500	55 (11.0)	Ref	Ref	Ref
2	253	19 (7.5)	0.69 [0.40-1.19]	0.64 [0.37-1.13]	0.57 [0.30-1.09]
≥4	208	13 (6.3)	0.58 [0.31-1.09]	0.52 [0.27-1.01]	0.57 [0.25-1.31]
Underuse					
0	510	39 (7.7)	Ref	Ref	Ref
1	293	29 (9.9)	1.32 [0.80-2.19]	1.33 [0.79-2.24]	1.46 [0.83-2.58]
≥2	158	19 (12.0)	1.68 [0.94-3.00]	1.51 [0.82-2.78]	1.71 [0.80-3.69]
Overuse					
0	336	28 (8.3)	Ref	Ref	Ref
1	370	36 (9.7)	1.16 [0.69-1.94]	1.16 [0.67-1.99]	1.22 [0.69-2.15]
2	174	13 (7.5)	0.96 [0.48-1.91]	0.92 [0.45-1.87]	1.04 [0.50-2.18]
≥3	81	10 (12.4)	1.67 [0.77-3.63]	1.63 [0.73-3.64]	1.80 [0.77-4.20]
Variables	Cardiac ADRs				
	N _{total}	N _{With ADR} (%)	Model 1 ^a OR [95%CI]	Model 2 ^b OR [95%CI]	Model 3 ^c OR [95%CI]
FORTA score					
Per 1 point	-	-	1.01 [0.87-1.17]	0.96 [0.82-1.13]	1.03 [0.80-1.32]
0-1	244	6 (2.5)	Ref	Ref	Ref
2-3	369	11 (3.0)	1.25 [0.46-3.45]	1.05 [0.36-3.07]	1.02 [0.28-3.70]
4-6	234	3 (1.3)	0.52 [0.13-2.11]	0.34 [0.08-1.46]	0.23 [0.03-1.69]
≥7	114	4 (3.5)	1.31 [0.36-4.81]	0.96 [0.24-3.82]	1.55 [0.19-12.39]
PIM use					
0	528	10 (1.9)	Ref	Ref	Ref
2	238	9 (3.8)	1.97 [0.79-4.93]	1.78 [0.67-4.73]	1.99 [0.56-7.10]
≥4	195	5 (2.6)	1.28 [0.43-3.81]	0.93 [0.29-2.99]	1.01 [0.17-6.13]
Underuse					
0	521	12 (2.3)	Ref	Ref	Ref
1	300	7 (2.3)	1.03 [0.40-2.66]	0.84 [0.31-2.30]	0.86 [0.27-2.72]
≥2	140	5 (3.6)	1.53 [0.53-4.45]	1.62 [0.51-5.12]	1.41 [0.34-5.87]
Overuse					
0	315	11 (3.5)	Ref	Ref	Ref
1	376	8 (2.1)	0.63 [0.25-1.59]	0.51 [0.19-1.38]	0.55 [0.19-1.62]
2	179	4 (2.2)	0.66 [0.21-2.12]	0.61 [0.18-2.11]	0.85 [0.23-3.16]
≥3	91	1 (1.1)	0.30 [0.04-2.39]	0.29 [0.03-2.40]	0.37 [0.04-3.51]

To be continued on next page

Variables	Neurological ADRs				
	N _{total}	N _{With ADR} (%)	Model 1 ^a	Model 2 ^b	Model 3 ^c
			OR [95%CI]	OR [95%CI]	OR [95%CI]
FORTA score					
Per 1 point	-	-	1.00 [0.94-1.07]	0.98 [0.91-1.06]	0.97 [0.87-1.09]
0-1	244	32 (13.1)	Ref	Ref	Ref
2-3	369	58 (15.7)	1.26 [0.79-2.02]	1.16 [0.71-1.90]	1.02 [0.60-1.73]
4-6	234	42 (18.0)	1.52 [0.92-2.52]	1.24 [0.73-2.12]	1.11 [0.58-2.12]
≥7	114	12 (10.5)	0.87 [0.43-1.78]	0.76 [0.36-1.61]	0.71 [0.27-1.88]
PIM use					
0	528	76 (14.4)	Ref	Ref	Ref
2	238	42 (17.7)	1.33 [0.88-2.02]	1.19 [0.76-1.85]	1.12 [0.67-1.85]
≥4	195	26 (13.3)	0.99 [0.61-1.61]	0.90 [0.54-1.50]	0.87 [0.43-1.74]
Underuse					
0	521	77 (14.8)	Ref	Ref	Ref
1	300	42 (14.0)	0.93 [0.62-1.40]	0.82 [0.53-1.26]	0.75 [0.47-1.22]
≥2	140	25 (17.9)	1.22 [0.74-2.01]	0.93 [0.54-1.60]	0.87 [0.45-1.68]
Overuse					
0	315	43 (13.7)	Ref	Ref	Ref
1	376	65 (17.3)	1.30 [0.86-1.98]	1.55 [0.98-2.44]	1.59 [0.99-2.56]
2	179	27 (15.1)	1.18 [0.70-2.00]	1.39 [0.79-2.44]	1.48 [0.82-2.67]
≥3	91	9 (9.9)	0.73 [0.34-1.57]	0.84 [0.38-1.87]	0.96 [0.42-2.18]
Variables	Gastrointestinal ADRs				
	N _{total}	N _{With ADR} (%)	Model 1 ^a	Model 2 ^b	Model 3 ^c
			OR [95%CI]	OR [95%CI]	OR [95%CI]
FORTA score					
Per 1 point	-	-	1.05 [1.00-1.10]	1.04 [0.98-1.10]	1.03 [0.95-1.11]
0-1	244	82 (33.6)	Ref	Ref	Ref
2-3	369	121 (32.8)	0.94 [0.67-1.33]	0.87 [0.61-1.25]	0.75 [0.50-1.11]
4-6	234	74 (31.6)	0.88 [0.60-1.29]	0.76 [0.51-1.14]	0.60 [0.37-0.98]
≥7	114	49 (43.0)	1.41 [0.89-2.24]	1.27 [0.78-2.08]	1.00 [0.52-1.91]
PIM use					
0	528	178 (33.7)	Ref	Ref	Ref
2	238	78 (32.8)	0.94 [0.68-1.31]	0.86 [0.61-1.22]	0.73 [0.50-1.08]
≥4	195	70 (35.9)	1.06 [0.75-1.50]	0.97 [0.67-1.40]	0.80 [0.48-1.32]
Underuse					
0	521	158 (30.3)	Ref	Ref	Ref
1	300	116 (38.7)	1.45 [1.08-1.96]	1.29 [0.94-1.77]	1.17 [0.83-1.67]
≥2	140	52 (37.1)	1.38 [0.94-2.06]	1.09 [0.72-1.65]	0.89 [0.54-1.48]
Overuse					
0	315	108 (34.3)	Ref	Ref	Ref
1	376	129 (34.3)	1.00 [0.73-1.37]	1.08 [0.77-1.52]	1.07 [0.75-1.52]
2	179	59 (33.0)	0.89 [0.60-1.32]	1.04 [0.69-1.57]	1.01 [0.66-1.56]
≥3	91	30 (33.0)	0.90 [0.55-1.48]	0.97 [0.57-1.64]	0.93 [0.54-1.59]

Values in bold are statistically significant (p<0.05)

Abbreviations: CI, confidence interval; OR, odds ratio.

^a Adjusted for age and sex.

^b Adjusted for age, sex, tumor stage, tumor location, year of CRC diagnosis, year of schooling, smoking status, BMI, lifetime physical activity, lifetime alcohol consumption, red meat consumption, and processed meat consumption.

^c Adjusted for age, sex, tumor stage, tumor location, year of CRC diagnosis, year of schooling, smoking status, BMI, lifetime physical activity, lifetime alcohol consumption, red meat consumption, processed meat consumption, functional status, and comorbidity.