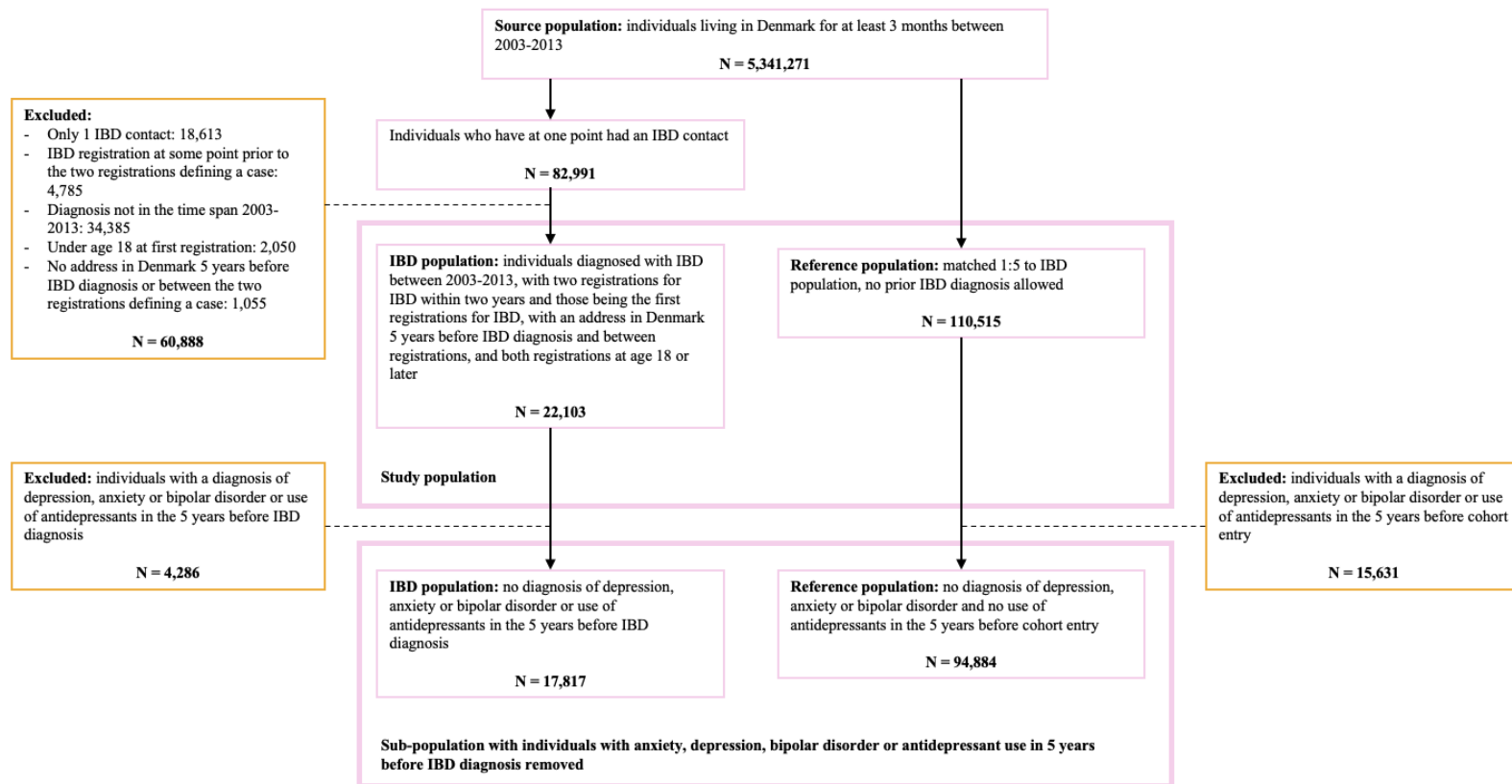


## Supplementary materials

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Supplementary figure 1. Flow chart describing formation of the IBD and reference cohorts. IBD, inflammatory bowel disease.

Time	IBD					References				
	N	Anxiety (%)	Depression (%)	Bipolar disorder (%)	Antidepressants (%)	N	Anxiety (%)	Depression (%)	Bipolar disorder (%)	Antidepressants (%)
-5	22,103	45 (0·2)	151 (0·7)	17 (0·1)	1,856 (8·4)	110,515	130 (0·1)	547 (0·5)	109 (0·1)	6,695 (6·1)
-4	22,103	38 (0·2)	165 (0·7)	24 (0·1)	2,029 (9·2)	110,515	139 (0·1)	598 (0·5)	114 (0·1)	7,483 (6·8)
-3	22,103	45 (0·2)	182 (0·8)	26 (0·1)	2,264 (10·2)	110,515	172 (0·2)	675 (0·6)	150 (0·1)	8,201 (7·4)
-2	22,103	50 (0·2)	199 (0·9)	24 (0·1)	2,489 (11·3)	110,515	176 (0·2)	744 (0·7)	158 (0·1)	8,938 (8·1)
-1	22,103	54 (0·2)	267 (1·2)	28 (0·1)	2,809 (12·7)	110,515	226 (0·2)	803 (0·7)	171 (0·2)	9,693 (8·8)
0	21,657	77 (0·4)	368 (1·7)	31 (0·1)	3,018 (13·9)	109,699	248 (0·2)	830 (0·8)	181 (0·2)	10,087 (9·2)
1	21,304	80 (0·4)	322 (1·5)	36 (0·2)	3,002 (14·1)	108,305	262 (0·2)	828 (0·8)	196 (0·2)	10,221 (9·4)
2	20,958	75 (0·4)	273 (1·3)	39 (0·2)	2,979 (14·2)	106,894	293 (0·3)	850 (0·8)	186 (0·2)	10,327 (9·7)
3	20,618	67 (0·3)	265 (1·3)	41 (0·2)	2,861 (13·9)	105,543	299 (0·3)	897 (0·8)	199 (0·2)	10,287 (9·7)
4	20,296	60 (0·3)	236 (1·2)	45 (0·2)	2,811 (13·9)	104,117	300 (0·3)	810 (0·8)	208 (0·2)	10,346 (9·9)
5	18,296	60 (0·3)	233 (1·3)	47 (0·3)	2,573 (14·1)	94,154	263 (0·3)	734 (0·8)	196 (0·2)	9,574 (10·2)
6	16,112	70 (0·4)	209 (1·3)	40 (0·2)	2,257 (14·0)	83,276	240 (0·3)	675 (0·8)	193 (0·2)	8,575 (10·3)
7	13,920	61 (0·4)	152 (1·1)	33 (0·2)	1,957 (14·1)	72,078	184 (0·3)	549 (0·8)	156 (0·2)	7,411 (10·3)
8	11,835	49 (0·4)	149 (1·3)	26 (0·2)	1,658 (14·0)	61,294	167 (0·3)	467 (0·8)	141 (0·2)	6,308 (10·3)
9	9,802	45 (0·5)	111 (1·1)	18 (0·2)	1,385 (14·1)	50,800	174 (0·3)	397 (0·8)	117 (0·2)	5,214 (10·3)
10	7,922	30 (0·4)	103 (1·3)	19 (0·2)	1,130 (14·3)	41,103	121 (0·3)	293 (0·7)	91 (0·2)	4,194 (10·2)

**Supplementary table 1.** Yearly prevalence of hospital contacts for anxiety, depression, and bipolar disorder and of dispensed prescriptions for antidepressants in patients with IBD and reference individuals. Time is indicated relative to time of IBD diagnosis/index date. IBD, inflammatory bowel disease.

	Age group/sex	IBD (n=22,103)		References (n=110,515)		OR (95% CI)	P-value
		Cases	%	Cases	%		
<b>Anxiety</b>	18-39 years	80	0.9	294	0.6	1.4 (1.1-1.7)	0.7993
	40-59 years	53	0.8	191	0.6	1.4 (1.0-1.9)	
	60+ years	28	0.5	87	0.3	1.5 (1.2-1.8)	
	Female	107	0.9	410	0.7	1.3 (1.1-1.6)	
	Male	54	0.5	162	0.3	1.5 (1.2-1.8)	
<b>Depression</b>	18-39 years	191	2.0	835	1.8	1.1 (1.0-1.3)	0.0022
	40-59 years	185	2.7	555	1.6	1.7 (1.4-2.0)	
	60+ years	183	3.1	594	2.0	1.4 (1.3-1.6)	
	Female	385	3.2	1,389	2.3	1.4 (1.2-1.6)	
	Male	174	1.7	595	1.2	1.4 (1.3-1.6)	
<b>Bipolar disorder</b>	18-39 years	16	0.2	67	0.1	1.2 (0.7-2.1)	0.2252
	40-59 years	13	0.2	108	0.3	0.6 (0.3-1.1)	
	60+ years	17	0.3	93	0.3	0.9 (0.6-1.2)	
	Female	33	0.3	169	0.3	1.0 (0.7-1.4)	
	Male	13	0.1	99	0.2	0.8 (0.6-1.1)	
<b>Use of antidepressants</b>	18-39 years	1,214	12.9	5,014	10.7	1.2 (1.2-1.3)	<.0001
	40-59 years	1,461	21.4	5,002	14.6	1.6 (1.5-1.7)	
	60+ years	1,540	26.2	5,293	18.0	1.5 (1.4-1.5)	
	Female	2,862	23.9	10,200	17.0	1.5 (1.5-1.6)	
	Male	1,353	13.4	5,109	10.1	1.4 (1.4-1.5)	

**Supplementary table 2.** Risk divided by age of diagnosis and sex of having a hospital contact for anxiety, depression, or bipolar disorder or having a dispensed prescription for antidepressants in the five years before IBD diagnosis/index date. IBD, inflammatory bowel disease; PY, person-years; OR, odds ratio.

	<b>IBD (n=17,817)</b>	<b>Crohn's disease (n=5,378)</b>	<b>Ulcerative colitis (n=12,439)</b>	<b>References (n=94,916)</b>
<b>Mean age at IBD diagnosis or index date</b>	44.5 years	41.2 years	46.0 years	45.1 years
<b>Age at diagnosis or index date</b>				
18-39	8,137 (45.7%)	2,864 (53.3%)	5,273 (42.4%)	41,805 (44.0%)
40-59	5,354 (30.0%)	1,485 (27.6%)	3,869 (31.1%)	29,058 (30.6%)
60 +	4,326 (24.3%)	1,029 (19.1%)	3,297 (26.5%)	24,053 (25.3%)
<b>Sex</b>				
Female	9,084 (51.0%)	2,945 (54.8%)	6,139 (49.4%)	49,533 (52.2%)
Male	8,733 (49.0%)	2,433 (45.2%)	6,300 (50.6%)	45,383 (47.8%)
<b>Year of IBD diagnosis or index date</b>				
2003-2006	6,401 (35.9%)	1,862 (34.6%)	4,539 (36.5%)	33,892 (35.7%)
2007-2010	6,630 (37.2%)	1,952 (36.3%)	4,678 (37.6%)	35,447 (37.3%)
2011-2013	4,786 (26.9%)	1,564 (29.1%)	3,222 (25.9%)	25,577 (26.9%)

**Supplementary table 3.** Baseline characteristics of all patients diagnosed with IBD at age 18 or later and reference individuals in Denmark between 2003-2013 with no history of psychiatric disease in the five years before cohort entry. IBD, inflammatory bowel disease.

	Age group/sex	IBD (n=17,817)		References (n=94,884)		HR (95% CI)	P-value	
		Cases	IR/1000 PY	Cases	IR/1000 PY			
<b>Anxiety</b>	18-39 years	125	1.50	577	1.35	1.1(0.9-1.4)	0.1089	
	40-59 years	62	1.15	229	0.77	1.5 (1.1-2.0)		
	60+ years	60	1.76	256	1.23	1.5 (1.1-2.0)		
	Female	154	1.75	667	1.36	1.3 (1.1-1.5)		0.8282
	Male	93	1.12	395	0.90	1.3 (1.0-1.6)		
<b>Depression</b>	18-39 years	249	3.02	1,090	2.57	1.2 (1.0-1.4)	<.0001	
	40-59 years	137	2.57	429	1.46	1.8 (1.5-2.2)		
	60+ years	191	5.70	600	2.91	2.0 (1.7-2.3)		
	Female	327	3.76	1,303	2.67	1.4 (1.3-1.6)		0.1252
	Male	250	3.04	816	1.87	1.6 (1.4-1.9)		
<b>Bipolar disorder</b>	18-39 years	26	0.31	135	0.31	1.0 (0.7-1.5)	0.0549	
	40-59 years	11	0.20	44	0.15	1.4 (0.7-2.7)		
	60+ years	9	0.26	19	0.09	3.0 (1.3-6.6)		
	Female	27	0.30	113	0.23	1.3 (0.9-2.0)		0.7482
	Male	19	0.23	85	0.19	1.2 (0.7-1.9)		
<b>Use of antidepressants</b>	18-39 years	1,447	19.49	6,130	15.73	1.2 (1.2-1.3)	<.0001	
	40-59 years	1,015	21.48	3,871	14.21	1.5 (1.4-1.6)		
	60+ years	1,103	37.68	4,718	25.00	1.5 (1.4-1.6)		
	Female	2,058	27.09	8,888	20.13	1.3 (1.3-1.4)		0.2261
	Male	1,507	20.15	5,831	14.25	1.4 (1.3-1.5)		

**Supplementary table 4.** Risk divided by age of diagnosis and sex of having a hospital contact for anxiety, depression, or bipolar disorder or having a dispensed prescription for antidepressants in the ten years following IBD diagnosis/index date in patients with IBD and reference individuals with no prior contacts for those diseases or prescriptions for antidepressants in the five years before IBD diagnosis/index date. IBD, inflammatory bowel disease; IR, incidence rate; PY, person-years; HR, hazard ratio.

<b>Indication</b>	<b>Total</b>	<b>Total without” No indication”</b>
<b>Depression</b>	43·4%	77·8%
<b>Anxiety</b>	6·2%	11·2%
<b>Bipolar disorder</b>	0·001%	0·003%
<b>Obsessive-compulsive disorder</b>	0·3%	0·5%
<b>Pain</b>	0·7%	1·2%
<b>For diseases of the mind</b>	5·0%	8·9%
<b>Other</b>	0·2%	0·4%
<b>No indication</b>	44·2%	NA

**Supplementary table 5.** Indications for dispensed prescriptions for antidepressants. NA, not applicable.

Year	Percentage of those with a contact for depression who also had a prescription		Percentage of those with a prescription who also had a contact for depression	
	IBD	References	IBD	References
-5	89%	84%	7%	7%
-4	87%	85%	7%	7%
-3	86%	85%	7%	7%
-2	86%	86%	7%	7%
-1	90%	86%	9%	7%
0	89%	87%	11%	7%
1	88%	84%	9%	7%
2	88%	85%	8%	7%
3	85%	84%	8%	7%
4	87%	86%	7%	7%
5	87%	84%	8%	6%
6	87%	82%	8%	6%
7	83%	84%	6%	6%
8	87%	80%	8%	6%
9	85%	84%	7%	6%
10	85%	86%	8%	6%

**Supplementary table 6.** Comparison between having hospital contacts for depression and having dispensed prescriptions for antidepressants by year in patients with IBD and in reference individuals. IBD, inflammatory bowel disease.