

Supplemental Online Content

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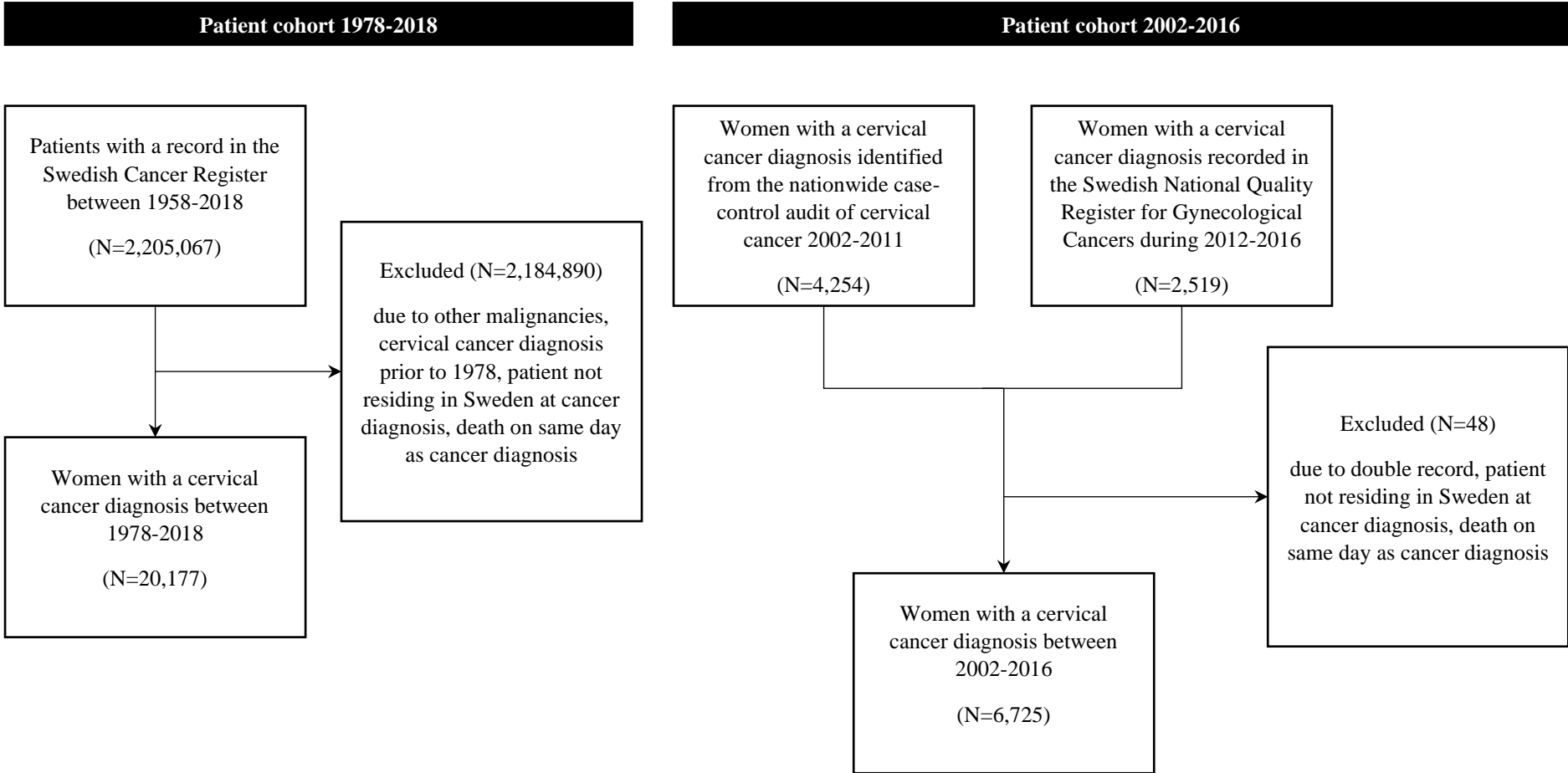
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This supplemental material has been provided by the authors to give readers additional information about their work.

eFigure 1. Details on Study Exclusions and Patient Cohorts Analyzed



eTable 1. Pre-Cancer Mental Disorders and Corresponding ICD 8/9/10 Codes

Disorder	ICD-8 (1968-1986)	ICD-9 (1987-1996)	ICD-10 (1997-)
Any mental disorder	291, 295-315	291, 292, 295-319	F10-F99
Psychiatric disorders			
Substance abuse (not incl. tobacco and alcohol)	304	292, 303, 304, 305X	F10-F19 excl. F10, F17
Alcohol	291, 303	305B, 291	F10
Tobacco	-	305A	F17
Psychotic disorders (schizophrenia and non affective psychotic disorders)	295, 297, 298, 299	295, 297, 298	F20-F29
Depressive disorder	296.0, 296.2, 298.0, 300.4	296B, 296D, 298A, 300E, 311	F32-F33
Anxiety disorder	300.0, 300.2	300A, 300C	F40-F41
Stress-related disorders	307	308, 309	F43
Neurodevelopmental disorders			
Attention-deficit hyperactivity disorder	-	314	F90
Autism spectrum disorder	-	299	F84
Intellectual disability (mental retardation)	310-315	317-319	F70-F79

eTable 2. Distribution of FIGO Stage by Mental Disorder Severity

Characteristics	No mental disorder	Any mental disorder requiring outpatient care alone	Any mental disorder requiring inpatient care	Total	P-value ¹
FIGO - n (%)					
IA	1,272 (21.81)	91 (28.89)	114 (19.72)	1,477 (21.96)	<0.001
IB	2,257 (38.70)	133 (42.22)	197 (34.08)	2,587 (38.47)	
II+	2,237 (38.36)	84 (26.67)	256 (44.29)	2,577 (38.32)	
Unknown/missing	66 (1.13)	7 (2.22)	11 (1.90)	84 (1.90)	

Abbreviations: FIGO - The International Federation of Gynecology and Obstetrics

¹ P-value was based on Chi-square test.

eTable 3. Incidence Rates (IRs) and Hazard Ratios (HRs) With 95% CIs Comparing Overall Mortality in Patients with Cervical Cancer With vs Without a Preexisting Diagnosis of a Mental Disorder in the Patient Cohort of 2002-2016, by Type of Care for Mental Disorders

Groups ¹	Deaths	Person- years	Crude IR per 1000 person-years (95%CI)	Partially adjusted HR (95%CI) ²	Fully adjusted HR (95%CI) ³
Any mental disorder					
No	2128	42148	50.49 (48.39-52.68)	Ref.	Ref.
Yes – outpatient care alone	71	1962	36.18 (28.67-45.65)	1.08 (0.85-1.37)	1.03 (0.81-1.32)
Yes – inpatient care	267	3269	81.68 (72.45-92.09)	1.39 (1.23-1.58)	1.24 (1.09-1.42)
By type of psychiatric disorders					
<i>Substance abuse (incl. tobacco and alcohol)</i>					
No	2329	45684	50.98 (48.95-53.09)	Ref.	Ref.
Yes – outpatient care alone	15	288	52.06 (31.38-86.35)	1.43 (0.87-2.35)	1.29 (0.77-2.16)
Yes – inpatient care	122	1407	86.69 (72.59-103.52)	1.53 (1.27-1.83)	1.27 (1.05-1.53)
<i>Psychotic disorders⁴</i>					
No	2409	46930	51.33 (49.32-53.42)	Ref.	Ref.
Yes – outpatient care alone	3	63	47.52 (15.32-147.32)	1.24 (0.40-3.86)	0.94 (0.28-3.15)
Yes – inpatient care	54	386	139.82 (107.09-182.56)	1.78 (1.36-2.34)	1.53 (1.15-2.04)
<i>Depressive disorder</i>					
No	2330	45081	51.68 (49.63-53.83)	Ref.	Ref.
Yes – outpatient care alone	42	1173	35.81 (26.47-48.46)	1.10 (0.81-1.50)	1.04 (0.76-1.42)
Yes – inpatient care	94	1126	83.49 (68.21-102.19)	1.35 (1.10-1.66)	1.38 (1.11-1.71)
<i>Anxiety disorder</i>					
No	2377	45542	52.19 (50.14-54.33)	Ref.	Ref.
Yes – outpatient care alone	55	1118	49.2 (37.77-64.08)	1.34 (1.02-1.76)	1.32 (1.00-1.74)
Yes – inpatient care	34	720	47.24 (33.75-66.11)	0.93 (0.66-1.31)	0.92 (0.64-1.30)

Stress-related disorders

No	2396	45717	52.41 (50.35-54.55)	Ref.	Ref.
Yes – outpatient care alone	20	773	25.89 (16.70-40.13)	0.85 (0.55-1.32)	0.87 (0.55-1.36)
Yes – inpatient care	50	890	56.17 (42.57-74.11)	1.12 (0.85-1.48)	0.99 (0.74-1.32)

Abbreviations: IR – incidence rate, CI – 95% confidence interval, HR – hazard ratio, ref – reference category

¹ Results by type of neurodevelopmental disorder are not shown due to insufficient power.

² Adjusted for age and calendar year of diagnosis (continuous)

³ Adjusted for age, calendar year of diagnosis (continuous), FIGO stage, tumor histology, residing region, educational level, and marital status

⁴ Psychotic disorders including schizophrenia and non-affective psychotic disorders

eTable 4. Incidence Rates (IRs) and Hazard Ratios (HRs) With 95% CIs Comparing Cervical Cancer–Specific Mortality in Patients with Cervical Cancer With vs Without a Preexisting Diagnosis of a Mental Disorder in the Patient Cohort of 2002-2016, by Type of Care for Mental Disorders

Groups ¹	Deaths	Person-years	Crude IR per 1000 person-years (95%CI)	Partially adjusted HR (95%CI) ²	Fully adjusted HR (95%CI) ³
Any mental disorder					
No	1401	42148	33.24 (31.54-35.03)	Ref.	Ref.
Yes – outpatient care alone	51	1962	25.99 (19.75-34.19)	0.98 (0.74-1.30)	0.94 (0.70-1.25)
Yes – inpatient care	173	3269	52.92 (45.6-61.43)	1.33 (1.14-1.56)	1.19 (1.01-1.40)
By type of psychiatric disorders					
<i>Any substance abuse (incl. tobacco and alcohol)</i>					
No	1534	45684	33.58 (31.94-35.3)	Ref.	Ref.
Yes – outpatient care alone	13	288	45.11 (26.2-77.7)	1.58 (0.93-2.68)	1.38 (0.79-2.41)
Yes – inpatient care	78	1407	55.42 (44.39-69.2)	1.41 (1.12-1.77)	1.19 (0.94-1.50)
<i>Psychotic disorders⁴</i>					
No	1590	46930	33.88 (32.25-35.59)	Ref.	Ref.
Yes – outpatient care alone	2	63	31.68 (7.92-126.66)	1.09 (0.27-4.37)	0.76 (0.18-3.24)
Yes – inpatient care	33	386	85.45 (60.75-120.19)	1.70 (1.20-2.40)	1.44 (1.01-2.05)
<i>Depressive disorder</i>					
No	1538	45081	34.12 (32.45-35.86)	Ref.	Ref.
Yes – outpatient care alone	29	1173	24.73 (17.18-35.58)	0.96 (0.66-1.39)	0.93 (0.64-1.35)
Yes – inpatient care	58	1126	51.51 (39.83-66.63)	1.24 (0.95-1.61)	1.28 (0.97-1.67)
<i>Anxiety disorder</i>					
No	1568	45542	34.43 (32.77-36.18)	Ref.	Ref.
Yes – outpatient care alone	41	1118	36.67 (27.00-49.81)	1.24 (0.90-1.69)	1.24 (0.90-1.71)
Yes – inpatient care	16	720	22.23 (13.62-36.28)	0.64 (0.39-1.04)	0.66 (0.39-1.10)
<i>Stress-related disorders</i>					
No	1577	45717	34.49 (32.83-36.24)	Ref.	Ref.

Yes – outpatient care alone	15	773	19.42 (11.71-32.21)	0.77 (0.46-1.29)	0.80 (0.48-1.34)
Yes – inpatient care	33	890	37.07 (26.36-52.15)	1.07 (0.76-1.51)	0.95 (0.67-1.36)

Abbreviations: IR – incidence rate, CI – 95% confidence interval, HR – hazard ratio, ref – reference category

¹ Results by type of neurodevelopmental disorder are not shown due to insufficient power.

² Adjusted for age and calendar year of diagnosis (continuous)

³ Adjusted for age, calendar year of diagnosis (continuous), FIGO stage, tumor histology, residing region, education level, and marital status

⁴ Psychotic disorders including schizophrenia and non-affective psychotic disorders

eTable 5. Five-Year Survival, Incidence Rates (IRs) and Hazard Ratios (HRs) of Overall Mortality in the Patient Cohort of 1978-2018, by Presence of a Preexisting Diagnosis of a Mental Disorder and Calendar Year of Cervical Cancer Diagnosis

Groups	Deaths	Person-years	5-year survival (%)	Crude IR per 1000 person-years (95%CI)	Fully adjusted HR (95%CI) ^a
Any mental disorder					
No	9995	221754	66.17	45.07 (44.2-45.96)	Ref.
Yes	704	9107	45.17	77.3 (71.8-83.23)	1.53 (1.42-1.66)
Any mental disorder stratified by calendar period of diagnosis					
<i>1978-1989</i>					
No	4563	101621	61.16	44.9 (43.62-46.22)	Ref.
Yes	171	2390	54.02	71.54 (61.58-83.1)	1.58 (1.36-1.85)
<i>1990-1999</i>					
No	2552	62099	64.97	41.1 (39.53-42.72)	Ref.
Yes	196	2658	52.36	73.75 (64.11-84.83)	1.64 (1.42-1.90)
<i>2000-2009</i>					
No	1860	40598	68.08	45.82 (43.78-47.95)	Ref.
Yes	183	2346	52.06	78.01 (67.49-90.17)	1.39 (1.19-1.62)
<i>2010-2018</i>					
No	1020	17439	73.88	58.49 (55.01-62.19)	Ref.
Yes	154	1713	63.12	89.89 (76.76-105.28)	1.52 (1.28-1.80)
					P ^b =0.44

Abbreviations: IR – incidence rate, CI – 95% confidence interval, HR – hazard ratio, ref – reference category

^a Adjusted for age, tumor histology, residing region, and calendar year of diagnosis (5-year categories)

^b Likelihood ratio test to test for interaction between mental disorder status and calendar year of diagnosis

eTable 6. Five-Year Survival, Incidence Rates (IRs) and Hazard Ratios (HRs) of Cervical Cancer–Specific Mortality in the Patient Cohort of 1978-2018, by Presence of a Preexisting Diagnosis of a Mental and Calendar Year of Cervical Cancer Diagnosis

Groups	Deaths	Person-years	5-year survival (%)	Crude IR per 1000 person-years (95%CI)	Fully adjusted HR (95%CI) ^a
Any mental disorder					
No	5083	221756	74.90	22.92 (22.3-23.56)	Ref.
Yes	370	9107	68.82	40.63 (36.69-44.99)	1.34 (1.20-1.49)
Any mental disorder stratified by calendar period of diagnosis					
<i>1978-1989</i>					
No	2001	101621	70.58	19.69 (18.85-20.57)	Ref.
Yes	74	2390	66.60	30.96 (24.65-38.88)	1.36 (1.08-1.72)
<i>1990-1999</i>					
No	1234	62099	75.02	19.87 (18.79-21.01)	Ref.
Yes	78	2658	68.72	29.35 (23.51-36.64)	1.18 (.94-1.49)
<i>2000-2009</i>					
No	1083	40598	76.85	26.68 (25.13-28.31)	Ref.
Yes	114	2346	63.18	48.6 (40.45-58.39)	1.45 (1.19-1.76)
<i>2010-2018</i>					
No	765	17439	79.52	43.87 (40.87-47.09)	Ref.
Yes	104	1713	74.36	60.71 (50.09-73.57)	1.33 (1.09-1.64)
					P ^b =0.61

Abbreviations: IR – incidence rate, CI – 95% confidence interval, HR – hazard ratio, ref – reference category

^a Adjusted for age, tumor histology, residing region, and calendar year of diagnosis (5-year categories)

^b Likelihood ratio test to test for interaction between mental health status and calendar year of diagnosis