Incidence of Comorbidities and Causes of Mortality in Patients With Sjögren Disease in the Swedish Population Between 2006–2022

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Background

- Sjögren's disease (SjD) is a systemic, chronic autoimmune disorder characterized by inflammation in the salivary and lacrimal glands. A substantial proportion of patients also have systemic involvement[1]
- The heterogeneous nature of SjD complicates the current understanding of unmet clinical needs and the overall disease burden in patients[2]
- The Swedish National Patient Register (NPR), including ICD-10 (International Classification of Diseases, 10th Revision) codes from inpatient care and from secondary outpatient care, is linked with the Prescribed Drugs Registry, the Cancer Register, and the Labor Market Studies Registry, and provides population-based longitudinal data of patients with SjD, including clinical characteristics and morbi-mortality that can be used for research[3]

Objective

To describe key clinical characteristics and comorbidities of patients with SjD in a Swedish population-based cohort

Methods

Study design and population

- Observational, retrospective cohort study that identified patients with SjD who were registered in the Swedish NPR
- Adult patients (≥18 years) with ≥2 independent diagnoses of SjD from internal medicine or rheumatology, and without co-existing systemic rheumatic diseases were selected between 01 January 2006 and 31 December 2022
- The index date was defined by the first date of SjD diagnosis during the study period and individual patients were followed until the end of study

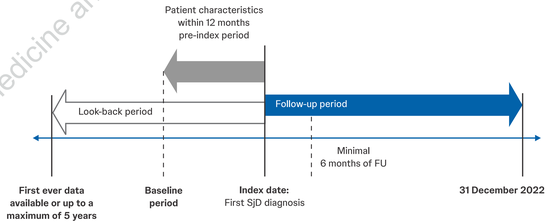
Clinical characteristics and comorbidities

- Comorbidities were identified from the NPR, which covers inpatient and outpatient specialist visit data from secondary care, and were further linked to relevant drug prescriptions on an individual patient level
- Charlson Comorbidity Index (CCI) was calculated using the method developed from the Swedish registry data using ICD-10 codes required from the NPR[4]
- The cohort was linked to the national cause of death registry for primary causes of death

Analysis

- Proportions of common causes of death and age at death were reported
- Incidence rates (IR) of comorbidities occurring within 5 or 10 years from the initial SjD diagnosis were reported per 1000 patient-years with 95% confidence intervals (CI), based on the Poisson exact method

Figure 1. Study design



FU=follow-up, *SjD*=Sjögren's disease.

Key Takeaways

- **Data from this study provided a longitudinal follow-up of SjD, suggesting that patients with SjD are commonly diagnosed with several comorbidities including glaucoma and maculopathy, malignancies, infections, fibromyalgia, and depression/anxiety disorders**
  - **Whether this stands for excess morbidity compared to the general population remains to be investigated**
- **The incident comorbidities manifest early, within 5 years of SjD diagnosis**
- **One limitation of this study is that some comorbidities have been traditionally linked to treatments such as antimalarials (maculopathy) and steroids (osteoporosis, type 2 diabetes), so the data should be interpreted carefully**
- **Common causes of death in patients with SjD included cardiovascular disease and malignancies**
- **In this study, approximately one in ten patients with SjD were later diagnosed with rheumatoid arthritis or systemic lupus erythematosus**
- **Results from this study revealed seemingly relevant comorbidities, including anxiety and depression that might indicate unmet clinical needs which would warrant more effective clinical management and targeted interventions**
- **Additional analyses comparing the frequency of comorbidities with population controls to estimate the impact of SjD will be included in future studies**

Results

Baseline demographics and clinical characteristics of population-based cohort of SjD

- Overall, 4463 patients with SjD were identified; median age at diagnosis was 58 years (interquartile range [IQR]: 46–68); 4093 (91.7%) were female
- The mean baseline CCI was 0.60 (standard deviation [SD]: 1.22) in this patient group, of which 107 (2.4%) had CCI ≥5 (**Table 1**)

Table 1. Baseline demographics and clinical characteristics of SjD cohort

A. Baseline demographics

	Demographics (N=4463)
Age at index date, median (IQR)	58.0 (46.0–68.0)
Sex – Female, n (%)	4093 (91.7)
Education, n (%)	
0–9 yrs	793 (17.8)
10–13 (high school)	1900 (42.6)
13+ (post secondary education)	1565 (35.1)
Post-graduate level	44 (1.0)
Missing	161 (3.6)
Employment status: In employment (age 18–65), n (%)	2022 (45.3)
Early sickness pension at baseline, n (%)	798 (17.9)
Primary diagnosis specialty, n (%)	
Internal medicine specialist care	857 (19.2)
Rheumatology	3613 (81.0)
Charlson Comorbidity Index (CCI)[4], mean (SD)	0.6 (1.22)
Duration of follow-up, median (IQR)	8.1 (4.3–13.2)

IQR=interquartile range, *SD*=standard deviation, *SjD*=Sjögren's disease.

B. Clinical characteristics

Comorbidity at baseline, n (%)	Clinical characteristics (N=4463)
Historical malignancies within 5 years looking back	**258 (5.8)**
Skin conditions	269 (6.0)
Glaucoma and maculopathy	227 (5.1)
Asthma	116 (2.6)
Malignant solid tumor	111 (2.5)
Dyspareunia	110 (2.5)
Pneumonia	91 (2.0)
Diabetes mellitus type II	90 (2.0)
Depression	88 (2.0)
Interstitial lung disease	86 (1.9)
Fibromyalgia	76 (1.7)
Urinary tract infections	67 (1.5)
Anxiety disorders	63 (1.4)
Chronic ischemic heart disease	60 (1.3)
COPD	59 (1.3)
Angina pectoris	51 (1.1)
Chronic renal failure	43 (1.0)
Congestive heart failure	41 (0.9)
Non-Hodgkin lymphoma	38 (0.9)
Diabetes mellitus type I	35 (0.8)
Cerebral infarction (ischemic stroke)	18 (0.4)
Monoclonal gammopathy	16 (0.4)
Acute myocardial infarction	15 (0.3)
Acute renal failure	11 (0.2)
Optic neuropathy	7 (0.2)
Retinal vasculitis	1 (0.0)

COPD=chronic obstructive pulmonary disease.

Rate of common incident comorbidities at 5 years and 10 years after diagnosis of SjD

- Within 5 years after SjD diagnosis, the most common incident comorbidities per 1000 patient-years included glaucoma and maculopathy (crude IR [cIR]: 22.44, 95% CI: 20.25–24.80), malignant solid tumors (cIR: 18.74, 95% CI: 16.77–20.88), urinary tract infections (cIR: 15.19, 95% CI: 13.46–17.09), pneumonia (cIR: 13.62, 95% CI: 11.98–15.43), and fibromyalgia (cIR: 11.56, 95% CI: 10.06–13.23), all diagnosed at secondary care (**Table 2**)
- Notably, diagnoses of depression and anxiety from secondary specialty care were seen within 5 years after SjD diagnoses, with cIR (IQR) of 10.07 (8.67–11.63) and 8.66 (7.37–10.10), per 1000 patient-years, respectively. The incidence of non-Hodgkin lymphoma, cIR was 2.15 per 1000 patient-years (95% CI: 1.54–2.92) within 5 years of SjD diagnosis and 1.81 per 1000 patient-years (95% CI: 1.37–2.35) within 10 years of follow-up
- Overall, 609 (13.7%) fatalities due to any cause were reported in the cohort during the study period, with median age at death of 78.89 years (IQR: 72.89–84.59)
- The most common primary causes of death in patients with SjD were malignancies (n=138, 22.7%; including non-Hodgkin lymphoma, n=13) at median age of 75.77 (IQR: 68.57–80.60), cardiovascular disease (n=85, 14.0%), infections (n=28, 4.6%), and pulmonary disease (n=26, 4.3%)
- By the end of the study period, 422 patients (10.8%) were diagnosed with rheumatoid arthritis or systemic lupus erythematosus

Table 2. Incidence rate of common comorbidities at 5 and 10 years following SjD diagnosis

Rate per 1000 patient years IR, (95% CI)	5 years after SjD diagnosis	10 years after SjD diagnosis
Glaucoma and maculopathy	22.44 (20.25–24.80)	21.16 (19.46–22.96)
All cancer	20.88 (18.78–23.15)	21.20 (19.51–23.00)
Malignant solid tumor	18.74 (16.77–20.88)	19.30 (17.70–21.00)
Urinary tract infections	15.19 (13.46–17.09)	15.73 (14.32–17.24)
Pneumonia	13.62 (11.98–15.43)	14.12 (12.79–15.56)
Fibromyalgia	11.56 (10.06–13.23)	9.64 (8.55–10.83)
Osteoporosis	10.23 (8.82–11.79)	10.75 (9.60–12.01)
Depression	10.07 (8.67–11.63)	8.52 (7.49–9.64)
Oral candidiasis	8.75 (7.45–10.21)	8.37 (7.36–9.47)
Asthma	8.72 (7.42–10.19)	7.78 (6.80–8.86)
Anxiety disorders	8.66 (7.37–10.10)	7.60 (6.64–8.65)
Chronic ischemic heart disease	7.83 (6.61–9.20)	6.79 (5.89–7.78)
Diabetes mellitus type II	7.39 (6.20–8.74)	6.93 (6.02–7.95)
Congestive heart failure	6.34 (5.26–7.59)	7.35 (6.42–8.38)
COPD	5.36 (4.37–6.51)	4.96 (4.20–5.81)
Acute myocardial infarction	4.72 (3.80–5.80)	4.29 (3.59–5.08)
Chronic renal failures	4.42 (3.53–5.47)	4.26 (3.56–5.06)
Sepsis	4.29 (3.41–5.33)	4.34 (3.64–5.14)
Collagenous colitis, unspecified colitis	4.17 (3.30–5.20)	3.66 (3.02–4.41)
Interstitial nephritis	4.16 (3.29–5.18)	4.79 (4.05–5.63)
Cerebral infarction (ischemic stroke)	3.87 (3.04–4.86)	4.31 (3.61–5.11)
Non-Hodgkin lymphoma	2.15 (1.54–2.92)	1.81 (1.37–2.35)

COPD=chronic obstructive pulmonary disease, *SjD*=Sjögren's disease.

Ongoing and related work

- Analysis to estimate the incident risk ratio versus comparator populations in the overall cohort is ongoing
- Poster presentation (1386) at ACR 2026: "Mortality and Loss of Life Expectancy in Patients With Sjögren Disease in Sweden: A Population-Based Study From 2006 to 2022"
- Poster presentation (1382) at ACR 2026: "Impact on Productivity of Sjögren's Disease in Swedish patients—A Nationwide Cohort Study Between 2006 and 2022"

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PRESENTED AT: The American College of Rheumatology (ACR) Convergence 2026; November 6–11, 2026; Orlando, Florida, USA. **REFERENCES: 1.** Nocturne G, Mariette X. *Nat Rev Rheumatol*. 2013;9(9):544–556. **2.** Mariette X, Criswell LA. *N Engl J Med*. 2018;378(10):931–939. **3.** Sakakibara S, et al. *Pharmacoepidemiol Drug Saf*. 2024;33(4):e5780. **4.** Ludvigsson et al. *Clin Epidemiol*. 2021;13:21–41. **ACKNOWLEDGMENTS:** Medical writing support was provided by Anubhav Mehra, M.Pharm, of SIRO Medical Writing Pvt. Ltd., India, under the direction of the authors in accordance with Good Publication Practice guidelines (Ann Intern Med. 2022;175:1298–1304). Namiko Abe, PhD, of Johnson & Johnson provided additional editorial support. Layout design and formatting for this presentation were provided by Sandeep Chavan of SIRO Medical Writing Pvt. Ltd., India (funded by Johnson & Johnson). **DISCLOSURES: Johannes Mofors:** None declared. **Ying Qu, Federico Zazzetti, Odalis Asin Milan,** and **Mikael Själin:** Employee of Johnson & Johnson, may own stock or stock options in Johnson & Johnson. **Jakob Börsum:** Employee of Cytel, may own stock or stock options in Cytel. **Coralie Bouillot:** None declared. **Peter Olsson:** Received consultant fees from Novartis, Eli Lilly, and Boehringer Ingelheim. **FUNDING:** This work was sponsored by Johnson & Johnson.
PREVIOUSLY PRESENTED AT: The 17th International Symposium on Sjögren's Disease (ISSJD); September 29–October 2, 2026; Paris, France.