Mortality and Loss of Life Expectancy in Patients With Sjögren's Disease in Sweden: A Population-Based Study From 2006 to 2022

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Key Takeaways

- **Observed mortality shows that patients with SjD were younger at time of death compared to patients with RA, possibly due to a younger age at diagnosis**
- **Age-adjusted difference in average survival time in disease is only 0.67 years longer for SjD than for RA**
- **The minor difference in survival time is noteworthy since RA still has an increased mortality rate amongst seropositive patients[7]**

Background

- Sjögren's disease (SjD) is a chronic, systemic, autoimmune disease characterized by presence of autoantibodies, lymphocytic infiltration of exocrine glandular tissues, and systemic organ and tissue injury[1]
- Dysregulated humoral immunity in SjD involves aberrant B-lymphocyte activity, leading to abnormally elevated immunoglobulin (IgG) and IgG autoantibody levels, particularly anti-Ro and anti-La[1]
- SjD is associated with a substantial disease burden, and an approximately 1.5-fold higher risk of all-cause mortality[2–4]. Common symptoms include mucosal dryness, fatigue, and pain

Mortality

- Evidence remains limited regarding mortality, loss of survival time, and comorbidity-associated causes of death in population-based settings

Huang H, et al. 2021—Systematic review and meta-analysis[4]	Theander E, et al. 2004—Prospective cohort (n=265, AECC)[5]	Rusinovich-Lovgach O, et al. 2025—Prospective cohort (n=314, AECC)[6]
SMR 1.46 (95% CI: 1.10–1.93)	SMR 1.17 (95% CI: 0.81–1.63)	SMR 1.70 (95% CI: 1.2–2.3)

AECC=American-European Consensus Criteria, ***CI***=confidence interval, ***SMR***= standardized mortality ratio.

Objective

To describe overall loss of lifetime and causes of mortality in a population-based SjD cohort, using patients with confirmed diagnosis of rheumatoid arthritis (RA) as comparator

Methods

Retrospective cohort study design

Study period:
1 January 2006–31 December 2022

Linking national registries:

- NPR (National patient registry): ICD codes from
  a. Inpatient care
  b. Outpatient specialist care
- Cause of death registry: ICD codes
- LISA (Labor market studies)

Participants

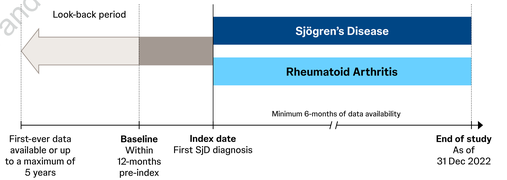
Key inclusion criteria:

- ≥18 years
- Two independent diagnoses within 24 months by a specialist department of internal medicine or rheumatology
- Sufficient data for baseline and minimal follow-up

For SjD:

- No diagnosis of other rheumatic inflammatory diseases during look-back period (5 years prior to index date)
- No record of other rheumatic inflammatory diseases after index SjD

Study Design



Outcome measures ✓ *Numbers of deaths* ✓ *Age at death* ✓ *All causes of death*

ICD=International Classification of Diseases, ***LISA***= Longitudinal Integrated Database for Health Insurance and Labour Market Studies, ***SjD***=Sjögren's disease.

Results

Patient characteristics of population-based SjD and RA cohorts in Sweden, 2006–2022

Table 1. Baseline characteristics and follow-up duration

	Sjögren's Disease (N=4463)	Rheumatoid Arthritis (N=74690)
Age at index, median (IQR), years	58.0 (46.0–68.0)	63.0 (52.0–72.0)
Sex, female, n (%)	4093 (91.7)	52565 (70.4)
Education, n (%)		
0–9 years	793 (17.8)	22499 (30.1)
10–13 (high school)	1900 (42.6)	31993 (42.8)
13+ (post secondary education)	1565 (35.1)	17439 (23.3)
Doctoral education	44 (1.0)	425 (0.6)
Missing	161 (3.6)	2334 (3.1)
Primary diagnosis specialty*, n (%)		
Internal medicine specialist care	857 (19.2)	18835 (25.2)
Rheumatology	3613 (81.0)	56007 (75.0)
Duration of follow-up, median (IQR), years	8.1 (4.3–13.2)	9.4 (4.9–14.7)

*Percentages exceed 100% because some patients received a diagnosis from both departments. ***IQR***=interquartile range.

Observed age at death is younger in patients with SjD in Sweden

- In this population-based cohort study, the median age at death was 1.9 years younger for patients with SjD versus RA among observed death cases during the study period (**Table 2**)

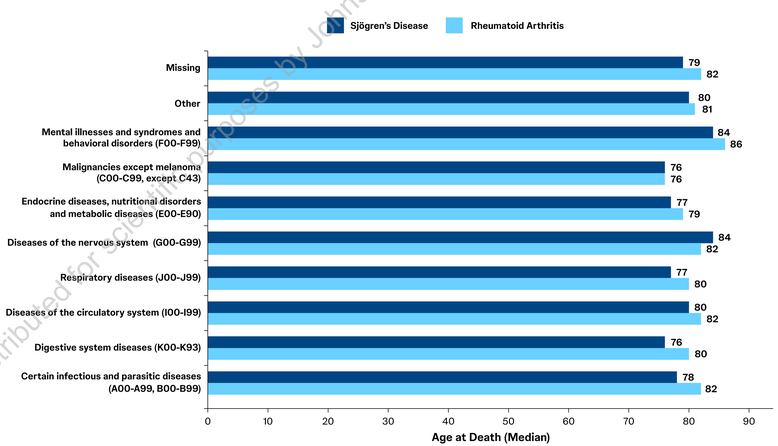
Table 2. All-cause mortality and age at death

	Sjögren's Disease (N=4463)	Rheumatoid Arthritis (N=74690)
Deaths from any cause, n (%)	609 (13.6)	20800 (27.8)
Age at death, median (IQR), years	**78.89 (72.89–84.59)**	**80.77 (74.14–86.15)**
Age at death, mean (SD), years	78.16 (9.24)	79.57 (9.15)
Time since index diagnosis, median (IQR), years	7.28 (4.25–11.04)	7.2 (4.06–10.98)

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

Observed age at death was younger across causes of death among reported cases during the study period

Figure 1. Median age at death by cause of death



Cause-of-death categories are shown with their ICD-10 code ranges.

Expected survival time lost in the study period for SjD and RA

- Unadjusted restricted mean survival time (RMST) suggests that patients with SjD survived, on average, 1.26 (95% CI: 1.13–1.40) additional years during the first 16 years after index diagnosis compared with patients with RA (**Table 3**)

Table 3. RMST, time lost, and unadjusted survival difference between SjD and RA over 16 years

	No. of deaths during study period	RMST mean (95% CI)	RMTL mean (95% CI)	ΔRMST–unadjusted mean (95% CI), *p*-value
Sjögren's Disease	609	14.26 (14.13–14.39)	1.74 (1.61–1.87)	**1.26 (1.13–1.40), *p*<0.001**
Rheumatoid Arthritis	20800	12.99 (12.96–13.03)	3.01 (2.97–3.04)	

CI=confidence interval, ***RA***=rheumatoid arthritis, ***RMST***=restricted mean survival time, ***RMTL***=restricted mean time lost, ***ΔRMST***=difference in restricted mean survival time, ***SjD***=Sjögren's disease.

Age-adjusted survival time difference between SjD and RA

- After adjusting for age at index diagnosis, patients with SjD had 0.67 (95% CI: 0.50–0.84) additional years of survival time compared with patients with RA in their first 16 years in disease (**Table 4**)

Table 4. Age-adjusted difference in RMST between SjD and RA over 16 years

	No. of deaths during study period	RMST mean (95% CI)	RMTL mean (95% CI)	ΔRMST–age adjusted mean (95% CI), *p*-value
Sjögren's Disease	609	14.26 (14.13–14.39)	1.74 (1.61–1.87)	**0.67 (0.50–0.84) *p*<0.001**
Rheumatoid Arthritis	20800	12.99 (12.96–13.03)	3.01 (2.97–3.04)	

CI=confidence interval, ***RA***=rheumatoid arthritis, ***RMST***=restricted mean survival time, ***RMTL***=restricted mean time lost, ***ΔRMST***=difference in restricted mean survival time, ***SjD***=Sjögren's disease.

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