Economic burden of SLE in Nordic countries – a Systematic Literature Review (SLR)

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Background

- Systemic lupus erythematosus (SLE) Is an autoimmune disease affecting multiple organ system and accompanied by alternating episodes of flare ups and quiescence.
- SLE has a varied geographic distribution with an incidence of 0.3 to 5.1 per 100 000 per year in Europe.
- SLE is associated with high direct cost and hospitalization due to activity, duration of disease and associated comorbidities.
- Sick leaves due to old age, organ damage and female contributed to high indirect cost.
- Limited studies report the economic burden associated with SLE in Nordic countries. We undertook a SLR to capture up-to-date economic burden and resource utilization data for SLE in Nordic region.

Methods

- Embase®, Medline® and Cochrane, were searched for studies reporting economic burden of SLE.
- Studies inclusion was limited by geography (Nordic countries: Denmark, Norway, Sweden, Finland, and Iceland), publication timeframe (January 2013 to June 2023) and language (English language only).
- Handsearching for the conference proceedings was also conducted in Google, Google scholar and PubMed.
- Two independent reviewers manually screened all citations in first screening process based on the title and abstract to identify a list of potentially relevant studies. After the first screening, the full texts of relevant studies were also examined by two reviewers in more detail to determine a final list of included studies eligible for inclusion in the SLR. A third independent reviewer resolved any discrepancies in their decisions at first and second screening level .
- Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed to identify studies on economic burden in SLE.

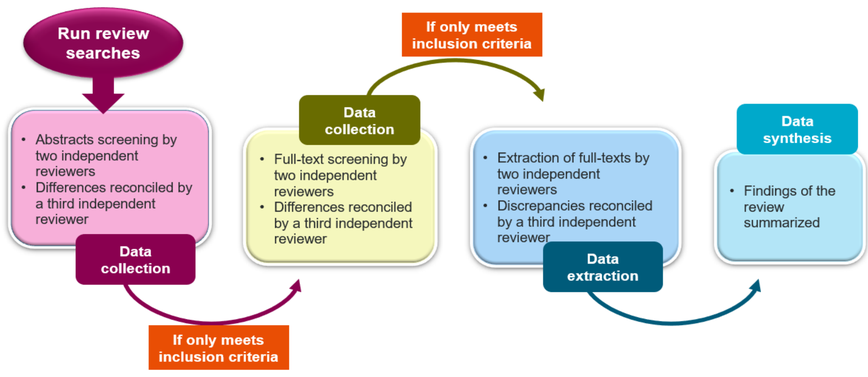


Figure 1: Study selection methodology for systematic literature review

Results

- A total of 153 studies were retrieved through electronic literature searches conducted over Embase, Cochrane and PubMed. After removing 1 duplicate record, 152 unique records were screened based on title and abstract and 108 records were excluded (study design (n=31), review/editorial (n=36), animal/in-vitro (n=1), disease (n=37), country (n=3)). Primary screening was followed by full-text screening of 44 records and 39 records were excluded (disease (n=2), country (n=37)). 3 new records were retrieved from the bibliography, conference search, database searches and clinical trials.gov searches. A total of 7 records which met inclusion criteria were included in the current review.
- Eight studies out of 153 publications met the inclusion criteria. Among these eight studies, five studies reported data for Sweden, two for Denmark and one for Finland. No study reported data for Norway and Iceland.
- Information regarding inpatient and outpatient visits, cost , treatment regimens was extracted from various hospital registries, patient specific SLE registry and official registries of local health authorities.
- In Sweden, the total cost for SLE was estimated to be 1.177 billion SEK ($188 million= 129.5 million €) with indirect costs being the major contributor (70% of these costs).
- In Sweden the indirect cost accounted for SEK 1307 (USD 207.45). The indirect cost was due to absence from work resulting in more sick leaves. It was calculated by multiplying sick leaves with yearly production loss per day.
- In Sweden, on an average patients had 1.7 flares per year. Based on average flares, the total estimated cost in a year accounted for 53 240 SEK.
- Activity and duration of disease, aging and presence of comorbidities were associated with higher cost burden. In Denmark, mean annual hospitalization rate was 25%.
- In Denmark, Complications to SLE and its treatment caused more hospitalizations. The common cause for hospitalization rate in Denmark is due to complications to SLE or its treatment. infections and SLE disease activity.
- Cardiovascular disease was the most common cause of hospitalization due to comorbidities. The hospitalizations were greater with flares as compared to long quiescent phase.
- The Finnish nationwide register data on special reimbursements for medication costs reported higher use of DMARDs for treatment of SLE in the first year of diagnosis. Higher proportion of SLE patient were on medication for chronic diseases than in total population.
- In Finland, Drugs for comorbidities like cardiovascular diseases, diabetes mellitus, dyslipidemia, hypothyroidism and obstructive pulmonary disease were more frequently purchased by incident SLE population as compared to total population.

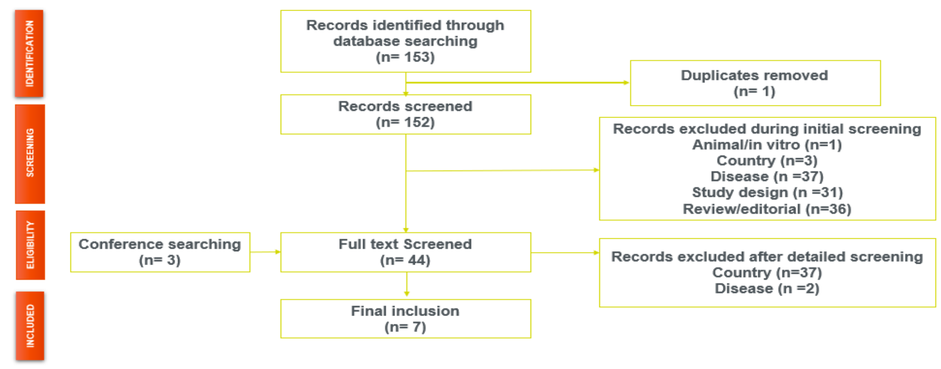
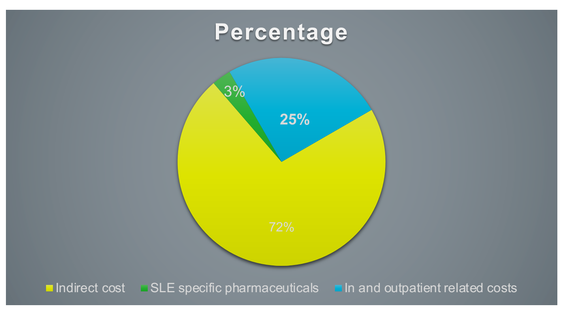
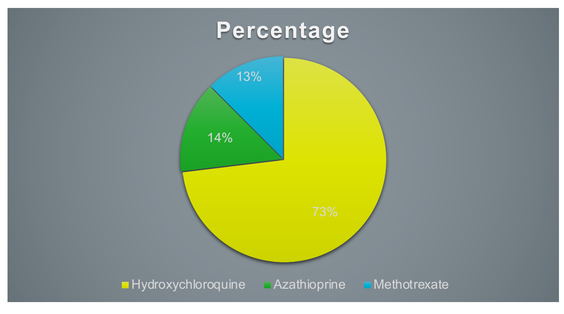


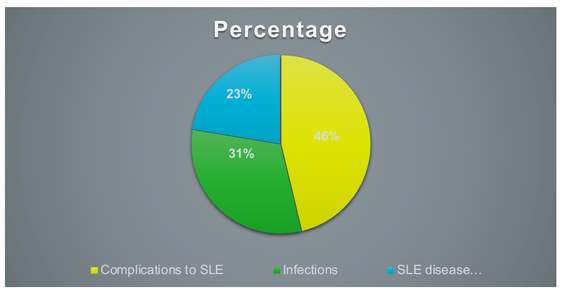
Figure 1: PRISMA flow diagram of included studies



› Fig 2: Various costs associated with SLE in Sweden



› Fig 3: Utilization of DMARDS in FINLAND



› Fig 4: Major contributors to cost burden in SLE in Denmark

Country	Factors
Sweden	Duration of disease, comorbidities and aging
Denmark	Complications of SLE, infections, SLE disease activity, cardiovascular disease, renal insufficiencies
Finland	Associated common chronic diseases

Figure 5: Factors associated with cost burden in SLE in Nordic population

Conclusions

In summary, disease activity, comorbidities and associated medication cost are the major factors associated with higher cost burden in SLE population. Associated chronic illness and flare episodes resulted in more sick leaves, thus contributing to indirect cost. The economic burden is prominent among SLE population. Sparse data is available on financial burden of SLE in Nordic region. Further studies are required to assess the direct and indirect cost associated with disease.