

ECONOMIC BURDEN OF ANKYLOSING SPONDYLITIS IN EUROPE. A SYSTEMATIC REVIEW OF THE LITERATURE

PMS63

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INTRODUCTION

- Ankylosing spondylitis (AS) predominantly affects axial skeleton with the involvement of sacroiliac joints, and leads to irreversible structural changes causing a decrease in spinal mobility¹.
- The disease onset often occurs during adolescence or in young adulthood. It can cause impaired function and activity limitation affecting negatively patients' during their working life. From a social and patient perspective, this loss of productivity due to the physical impairment causes a significant economic burden^{2,3}.

OBJECTIVE

- To appraise the literature referred to direct and indirect costs of ankylosing spondylitis in Europe.

METHODS

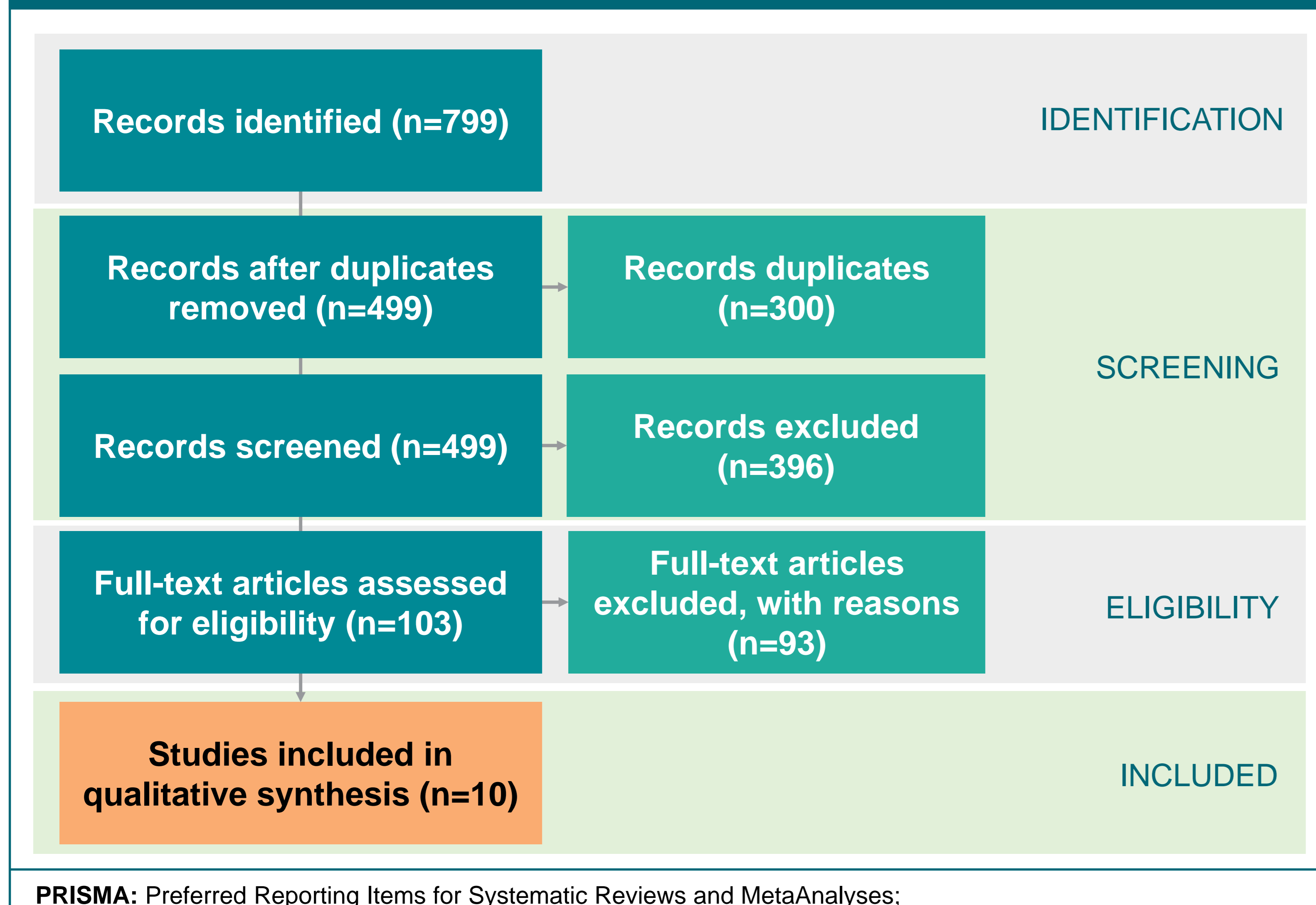
- A systematic review of the literature was performed.
- Electronic databases [MedLine/PubMed, Cochrane Library, ISI Wok, DARE, NHSEED, HTA] and Google Scholar were searched. Bibliographic references were hand searched.
- European studies, published in English or Spanish until May 2015, regarding direct and indirect costs of AS in Europe were selected.
- Editorials, letters, commentaries, opinion papers, congress proceedings and studies related to specific treatments were excluded.
- Costs were updated to €, 2015 using the 'CCEMG – EPPI-Centre Cost Converter' tool⁴.

RESULTS

Characteristics of the selected publications

- Of the 799 records identified initially, 10 publications were reviewed (Figure 1).

Figure 1. PRISMA Flow-Diagram



- Two systematic reviews, one cost-effectiveness study and seven observational studies (n=5 cross-sectional and n=2 retrospective), were included.
- Half of them (n=5) evaluated the economic burden related to AS from patient perspective. Most of them assessed the predictors of work impairment (absenteeism [time lost from work] and presentism [reduced productivity at work]) (Table 1).

Economic burden related to ankylosing spondylitis

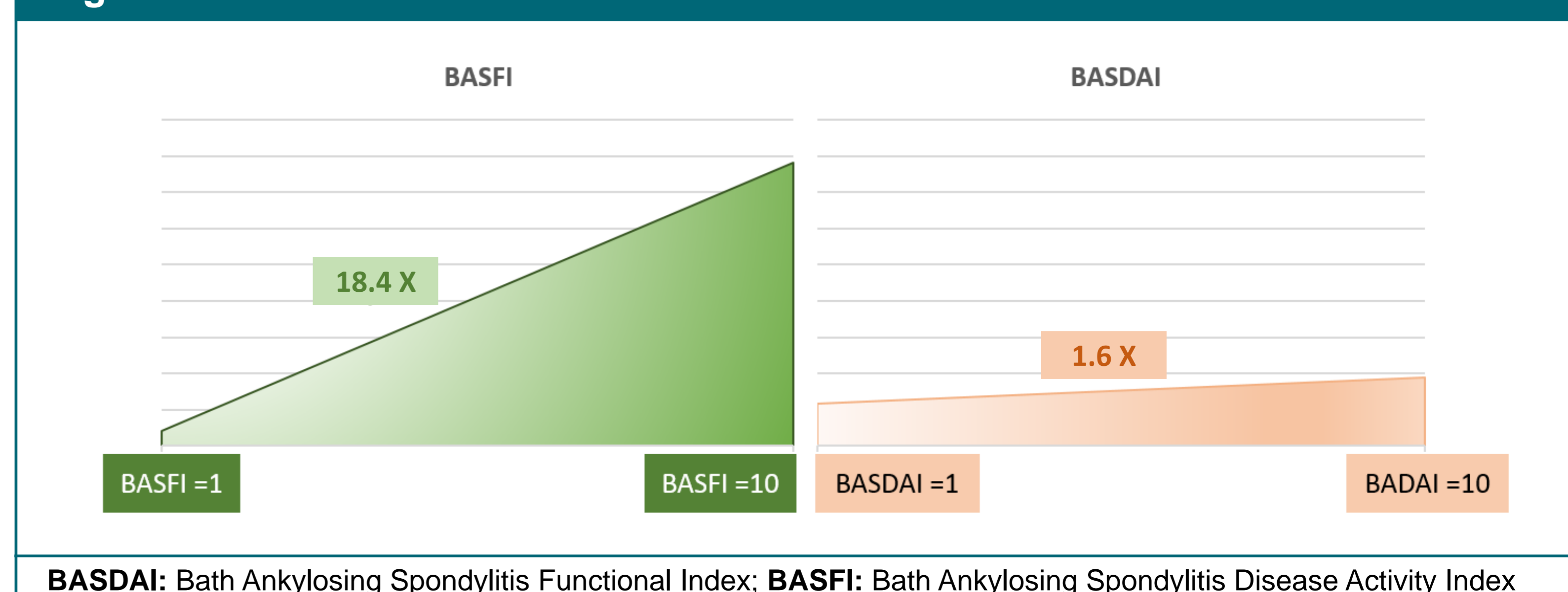
- The indirect cost associated to work impairment was the most important determinant of the total cost of patients with AS. From the societal perspective, the indirect cost represented between 53.4% to 62% of the total cost.
- Several studies reported the association between disease severity and cost, showing that AS severity increased 2 times the direct cost and 4 times the indirect cost.
- The total cost increased 18.4 times from BASFI (*Bath Ankylosing Spondylitis Disease Activity Index*)=1 to BASFI=10, and 1.6 times from BASDAI (*Bath Ankylosing Spondylitis Functional Index*)=1 to BASDAI=10 (Figure 2).

Table 1. Characteristics of selected publications

| Author year (level of evidence) country | Study design/perspective | Objective | Cost evaluated | |
|---|--|--|----------------|----|
| | | | DC | IC |
| Haglund et al. 2015, (2c), Sweden ⁵ | Cross-sectional / Patient | To assess predictors of presentism and activity impairment outside work in patients with AS. | | ✓ |
| Tsifetaki et al. 2015, (4), Greece ⁶ | Retrospective / TPP | To investigate the annual direct cost of patients with AS in Greece. | ✓ | |
| Kruntorádová et al. 2014, (2c), Czech Republic ⁷ | Cross-sectional / Patient | To determine the impact of AS on work productivity, to calculate the productivity costs, and to map out factors that influence work productivity. | | ✓ |
| Petříková et al. 2013, (4), Czech Republic ⁸ | Cross-sectional / Social / TPP | To investigate the burden of AS in Czech Republic. | ✓ | ✓ |
| Van der Burg et al. 2012, (3c) ⁹ Systematic Review (Netherlands) | SR / Patient | To review the effect of biological treatment in patients with AS on three work outcomes. | | ✓ |
| Palla et al. 2012, (4) ¹⁰ Systematic Review (Italy) | SR / TPP / Patient / Social | To review the last decade studies on the economic impact of AS. | ✓ | ✓ |
| Healey et al. 2011, (2c), UK ¹¹ | Cross-sectional / Patient | To examine the impact of AS on patients across the UK and identify factors associated with unemployment, absenteeism and presentism. | | ✓ |
| Tran Duy et al. 2011, (3b), Netherlands ¹² | CE Model (discrete event simulation)/ Social | To develop a modeling framework which can simulate long-term quality of life, societal costs and cost-effectiveness as affected by sequential treatment strategies for AS. | ✓ | ✓ |
| Zink et al. 2006, (4), Germany ¹³ | Retrospective / TPP | To determine burden of disease among patients treated by German rheumatologists. | ✓ | |
| Boonen et al. 2001, (2c), Netherlands ¹⁴ | Cross-sectional / Patient | To evaluate employment status, work disability, and work days lost in patients with AS. | | ✓ |

AS: Ankylosing spondylitis; CE: Cost-effectiveness; DC: direct cost; IC: indirect cost; TPP: Third-party payer; UK: United Kingdom;

Figure 2. Total cost increase associated to BASFI and BASDAI increase



Impact of ankylosing spondylitis in work productivity

- Absenteeism rates varied from 11% to 16%, and presentism from 19% to 33%.
- Disease activity (OR=3.24; OR=3.97) and depression (OR=3.22; OR=5.69) were predictors of absenteeism and presentism, while anxiety (OR=3.90) and patients' age (OR=1.04 per year) were associated with presentism (Table 2).

Table 2. Predictors of absenteeism and presentism in patients with AS

| | Absenteeism | Presentism |
|------------------|-------------|--------------------|
| Disease activity | OR=3.24 | OR=3.97 |
| Depression | OR=3.22 | OR=5.69 |
| Anxiety | -- | OR=3.90 |
| Patients' age | -- | OR=1.04 (per year) |

AS: Ankylosing spondylitis; OR: Odds Ratio

CONCLUSIONS

- Although cost estimations related to AS varied across European countries, the results showed that economic burden of AS in Europe is substantial, being the indirect cost due to productivity loss the main component of total cost. Worse physical function and higher disease activity were the main determinants of total costs. Disease activity and depression were associated with absenteeism and presentism.

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