

# Cost of psoriasis in Europe. A systematic review of literature.

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## INTRODUCTION

Psoriasis is a common, chronic, inflammatory skin disease that affects approximately 2% of the European population<sup>1</sup>.

Given the progression and persistence of the disease, patients diagnosed with psoriasis at younger age usually need life-long care, implying lifelong expenses. As a consequence, psoriasis has a substantial economic impact generated by the expenditures for different treatments, diagnostic procedures, medical consultations and productivity losses<sup>2</sup>.

## OBJECTIVE

To appraise the literature referred to direct and indirect costs of psoriasis in Europe.

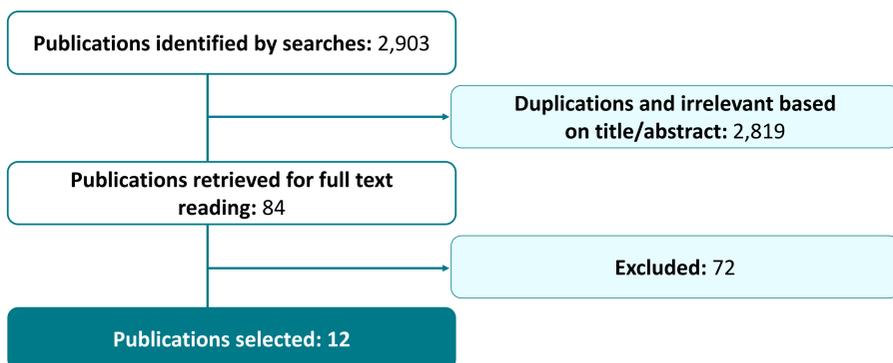
## METHODS

A systematic review of the literature was performed. Electronic databases [MedLine/PubMed, Scopus, Cochrane Library, ISI Wok, MEDES, IBECS, CSIC] and Google Scholar were searched to identify publications referred to direct and indirect costs of psoriasis published in English or Spanish until October 2013 in Europe. Bibliographic references were hand searched. Economic evaluations of specific drugs and of preventive or diagnostic interventions were excluded. Costs were updated to €2013 using the 'CCEMG – EPPI-Centre Cost Converter' tool<sup>3</sup>.

## RESULTS

Of the 2,903 publications identified initially, **12 studies**, published between 2001 and 2013 in Germany (n=4), Italy (n=2), The Netherlands (n=1), France (n=1), UK (n=1), Spain (n=1), Sweden (n=1) and Switzerland (n=1), were reviewed.

**Figure 1. Identified and selected publications in the literature review**



Economic analysis from social perspective was performed in seven studies. Third-part-payer perspective was assessed in six publications and patients' perspective was studied in two (Table 1).

**Table 1. Characteristics of the selected publications**

AUTHOR /YEAR	COUNTRY	STUDY DESIGN /PERSPECTIVE	OBJECTIVE
Steinke et al. 2013 <sup>4</sup>	Germany	Retrospective / Social	To compare the total costs of inpatient treatment and outpatient follow-up to mere outpatient therapy with different modalities (topical treatment, phototherapy, classic systemic therapy or Biological) over a period of 12 months.
Ghatnekar et al. 2012 <sup>5</sup>	Sweden	Prospective/ Social	To estimate the cost of care, psoriasis area and severity index (PASI), and quality of life in a defined patient population in Sweden.
Driessen et al. 2010 <sup>6</sup>	The Netherlands	Retrospective/ TPP	To investigate the economic impact of psoriasis, including direct costs, before and after the introduction of biologics, with special focus on hospitalized patients, treatment effectiveness and patient satisfaction with medication.
Meyer et al. 2010 <sup>7</sup>	France	Cross-sectional/ Patient	To evaluate the impact of psoriasis on personal and professional life, and to evaluate the cost of psoriasis for the patient.
Navarini et al. 2010 <sup>8</sup>	Switzerland	Retrospective/ Social	To obtain data on out-of-pocket expenses, costs of outpatient/office-based care and inpatient care for psoriasis, and to extrapolate total costs by state of severity to the entire Swiss population.
Fonia et al. 2010 <sup>9</sup>	United Kingdom	Retrospective/ TPP	To describe the impact of biologic therapy introduction on the use of medical resources, costs and where available, outcomes in patients with moderate to severe psoriasis.
Colombo et al. 2008 <sup>10</sup>	Italy	Prospective/ Social, TPP and Patient	To perform a cost-of illness analysis of patients with moderate and severe plaque psoriasis in Italy and assess direct, indirect costs and intangible costs (quality of life - QoL).
Schöffski et al. 2007 <sup>11</sup>	Germany	Retrospective/ TPP (NHS and pension funds)	To evaluate costs, disease severity and health-related quality of life (QoL) in patients with moderate to severe plaque-type psoriasis.
Carrascosa et al. 2006 <sup>12</sup>	Spain	Prospective/ Social	To estimate direct and indirect costs related to psoriasis in Spain.
Sohn et al. 2006 <sup>13</sup>	Germany	Retrospective/ Social	To obtain data on annual costs and QoL of patients with moderate to severe plaque psoriasis.
Berger et al. 2005 <sup>14</sup>	Germany	Retrospective Cross-sectional Prospective/ Social and TPP	To assess average annual cost and cost per flare of outpatient and office-base care for patients with moderate to severe chronic psoriasis vulgaris from several perspectives.
Finzi et al. 2001 <sup>15</sup>	Italy	Cross-sectional/ TPP	To assess the cost-of-caring for patients with psoriasis in Italy.

TPP: Third-party payer

## RESULTS

### Total cost associated to psoriasis

The mean **annual total cost** of psoriasis in Europe, from the social perspective, was heterogeneous and varied between **€1,340.25<sup>12</sup> and €8,253.74<sup>10</sup>**, mainly due to differences on study sample characteristics, methodology used and national health system features. In all studies, the **highest proportion** (68%-82.5%) of total costs was **attributable to direct costs** (hospitalizations, medications and laboratory tests). **Indirect cost** represented between **17.5% and 32%** of total cost.

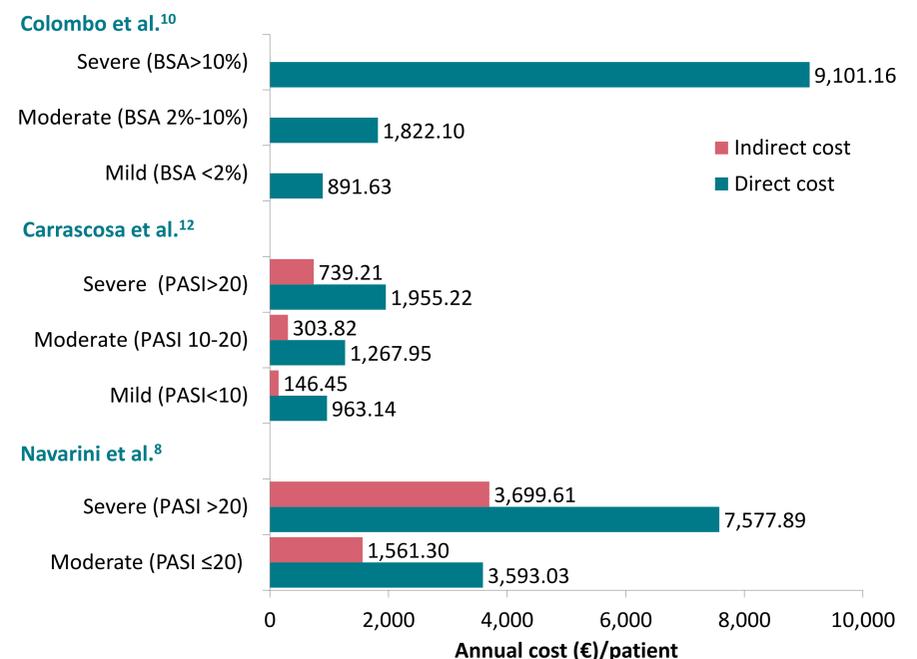
**Patients' out-of-pocket** expenditure ranged from **€480.67<sup>7</sup> to €797.00<sup>13</sup>**. Specific dermatological products (OTC) and alternative therapies represented the highest spending, with about 29%-59.7% and 24%-49%, respectively.

### Increase of psoriasis cost with disease severity

**Annual total expenses** incurred by **severe patient (PASI > 20)** were **2.5-fold higher than moderate and mild patients (PASI ≤ 20)**. Cost difference were due to higher hospitalization costs, phototherapy, laboratory examinations, prescription drugs (p<0.0001), and costs related to loss of productivity (p=0.03)<sup>10,12</sup> (Figure 2).

**Severe psoriasis (BSA > 10%)** was associated with an increment of **direct annual cost up to 11.5-fold** compared mild psoriasis (BSA < 2%), mainly because the increment of inpatient, drugs and balneotherapy cost<sup>8</sup> (Figure 2).

**Figure 2. Increase of psoriasis cost with disease severity**



### Impact of biologic therapy initiation

Following the initiation of biologic therapy the mean **PASI score felt by 8.9 points**. Although overall cost associated with psoriasis treatment increased, this increment was offset by significantly **less frequent** (p<0.035) and **less costly** (p<0.005) **inpatient admissions**, and a **reduction of mean number inpatient days by 76%**. All these factors contributed to a decline in annual inpatient cost [€2,357.30 (SD:722.29) vs. €564.19 (SD:257.62); p=0.005]<sup>9</sup>.

The introduction of biologics was accompanied by a mean **decrease in PASI of 66.4%**. The number of **day-care and hospital admission days** was reduced by 94% and 64%, respectively. Direct costs related to day-care admission decreased significantly during biologic therapy [€1,077.18 (95% CI 763.35-1,390.08 vs. €55.38 (95% CI 12.00-98.76)]<sup>6</sup>.

## CONCLUSIONS

**Costs results vary across European countries. Severe psoriasis is a costly disease. The use of biologic agents may contribute to a more efficient management of severe psoriasis due to a more steady control of symptoms that improves clinical outcomes and decreases the needs for hospital care and inpatient cost.**

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