

THE ECONOMIC BURDEN OF DRY EYE

With global prevalence estimates of dry eye disease ranging from 15% - 64%,¹⁻⁷ dry eye is an important contributor to direct economic burden

As a common reason to seek medical eye care, dry eye significantly increases health care resource utilization and direct medical costs.¹



\$467 USD per patient annually
Average patient-reported spending for dry eye medications in the U.S.^{8*}



Up to \$1.86 Million USD
Estimated annual cost to E.U. and U.K. health care systems of 1000 dry eye patients managed by an ophthalmologist (**Figure 1**)^{**}

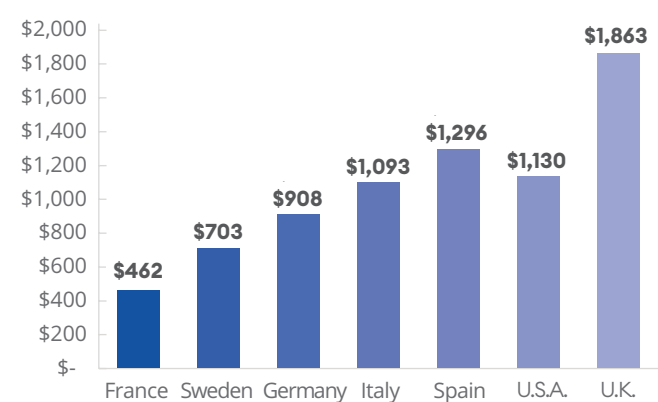
However, this *underestimates* real cost, as it doesn't include patients who self-manage or are managed by their general practitioner



\$5.5 Billion USD
U.S. direct medical cost of managing patients with dry eye^{10†}

Dry eye disease is also a significant clinical problem in developing countries and those with emerging economies;¹¹ however, less than 3% of affected individuals receive treatment,¹² which may contribute to a substantial quality of life and economic burden in these areas.

Figure 1: Dry eye management costs per patient in select countries, in 2021 U.S. dollars



European country data from Clegg et al., (2006)⁹; U.S. data from Yu et al., (2011).¹⁰ Costs inflated to 2021 U.S. dollars.¹³ Costs originally published in 2004 USD as \$273 (France), \$415 (Sweden), \$536 (Germany), \$645 (Italy), \$765 (Spain), \$1,100 (UK) and in 2008 USD as \$783 (U.S.A.).

In certain regions, the financial burden of dry eye may fall heavily on patients, especially if patients must pay out of pocket for ocular exams, diagnostic tests, and pharmacological or OTC therapy.

- China: Direct medical cost for patients with DED is estimated to be \$504 USD,¹⁴ total spending on prescriptions has almost doubled in the past 6 years, from 1.9 to 2.7 million CNY (p<0.05)¹⁵
- Australia: Mean direct medical costs are estimated to be \$1,420 AUD^{16†}
- Canada: Direct costs averaged \$2,433 CAD per patient with dry eye annually (9.6% of the total cost)¹⁷

Severity of DED, mixed DED subtype, and presence of anxiety have all been associated with higher direct medical costs.^{14,15,18,19}



In the U.S., dry eye drug sales accounted for approximately 19% of the total ophthalmic market in 2018.²⁰



From 2013 to 2019 in China, yearly prescriptions for DED nearly doubled, to ~22,000.^{15*}



Since 1997, the cost of DED per patient has tripled in Spain.²¹

Table. Annual costs related to DED from 1997 to 2015 in Spain.²¹

Cost (€)	1997	2015
Total annual cost	€5.6M	€31.7M
Mean cost per visit	€4,104	€5,345
Mean cost per patient	€5,104	€10,220

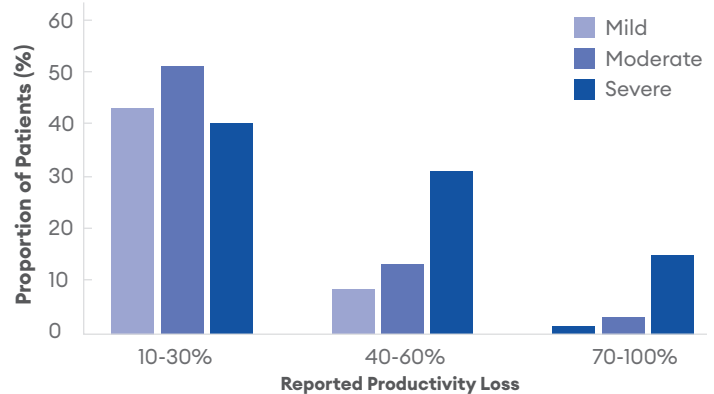
Dry eye contributes to productivity loss, responsible for a substantial portion of the economic burden of dry eye. Individuals with dry eye may have difficulty reading or using screens,²² and may avoid workplace environments that aggravate symptoms.¹



Productivity loss increases with increasing severity of dry eye^{22,23}

An online survey of 617 dry eye patients in the U.S. revealed considerable productivity loss regardless of severity of disease (**Figure 2**).²³

Figure 2: Reported productivity loss while working due to dry eye disease.²³



Participants responded to "During the past 7 days, how much did your dry eye affect your productivity while working?" with 0% indicating no impact, and 100% indicating dry eye completely prevented work.

A growing body of evidence supports the impact of DED on work productivity, with several recent articles from the U.S.,^{24,25} Saudi Arabia,²⁶ and U.K.,²⁷ demonstrating that the severity of dry eye disease was significantly associated with work productivity loss.

- High OSDI scores were associated with higher absenteeism and presenteeism, with an increase of 4.3% in work impairment and 4.8% in activity impairment for each 10-unit difference in OSDI (P<0.001).²⁴
- Of 463 respondents, 17.5% reported DED affected functional performance 1 to 2 hours daily, 47.5% reported difficulty focusing.²⁶



Dry eye results in considerable economic burden to society



\$8,084 USD

Estimated societal cost to Japan per year per office worker with dry eye disease²²



\$16,306 USD

Per-patient societal economic burden in the U.S. due to lost productivity¹⁰



\$442M AUD

Estimated indirect cost in Australia per year in patients with glaucoma and DED¹⁶



\$25,471 CAD

Estimated societal cost to Canada per year per patient¹⁷



\$112.9B to \$180.5B USD

Estimated healthcare cost in China per year¹⁹

Accounting for U.S. country-wide prevalence of dry eye disease, lost productivity was estimated to cost **\$80 billion USD** per year.¹⁰

Majority of total cost associated with DED in Canada is attributed to indirect cost, including:¹⁷

- Presenteeism: \$20,302 CAD [79.3%]
- Absenteeism: \$2,829 CAD [11.1%]



Patients with ophthalmic conditions such as DED have a higher prevalence of depression, which has been associated with 1.5x the cost of care compared with those without depression.^{28§}

*Restasis and Blephamide; **Direct costs including diagnostic tests, prescription drugs, surgical procedures, and specialist visits; †Direct costs including ocular lubricants, cyclosporine, punctal plugs, physician visits, and nutritional supplements; ‡In patients with glaucoma; §Patients age 60 years old and above, data from 2013 to 2019; ¶Across all healthcare sectors.

All costs are inflated to 2021 U.S. dollars.⁷ See appendix for originally published costs, exchange rates, and inflation details. DED=dry eye disease; IOP=intraocular pressure; QoL=quality of life; OSDI=Ocular Surface Disease Index

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