

THE BURDEN OF ASTIGMATISM FOR PATIENTS WITH CATARACTS

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Case Report

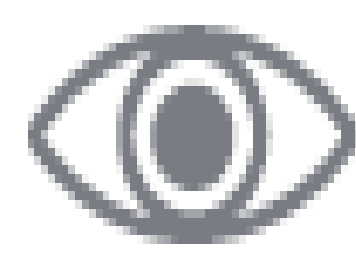
Purpose

Identify the published humanistic and economic burden on patients with the concomitant conditions of astigmatism and cataracts to facilitate evidenced-based clinical decisions.

Humanistic Burden



The reported percentage of cataract patients age >60 years old with ≥ 1.00 diopters (D) of astigmatism range between 42% - 47%.^{1,2}



Astigmatism reduces distance and near visual acuity, contrast sensitivity, stereo acuity, vision quality and task performance.^{3,4}



Globally only 8% of potential patients (15% in US) with ≥ 1.00 D of astigmatism are projected to receive a toric intraocular lens (IOL) during cataract surgery in 2019.⁶

The humanistic burden of **astigmatism** is concerning for geriatric patients as it **may worsen** following cataract surgery.¹ A retrospective study of 76,910 patients reported that the burden of astigmatism is not reduced after cataract surgery with implantation of monofocal IOLs.¹ In fact, a survey of 60 surgeons revealed that the proportion of patients with astigmatism achieving uncorrected visual acuity of 20/25 or better was lower when receiving monofocal IOLs with or without relaxing incisions compared to patients who received toric IOLs.⁷

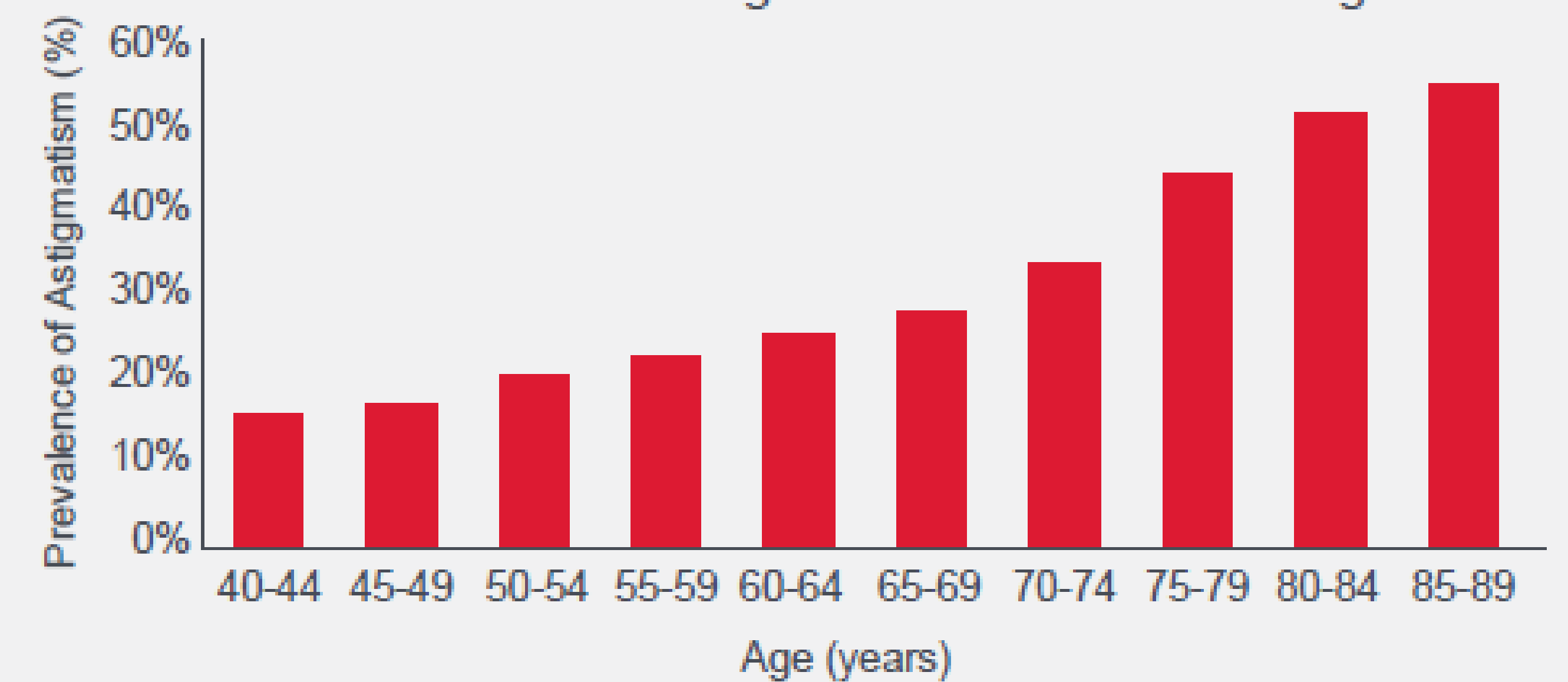
Eight studies reported uncorrected astigmatism post cataract surgery leads to higher spectacle dependence.² The implant of monofocal IOLs and use of **multifocal spectacles** may increase the **safety risk** for elderly patients with astigmatism.

Multifocal spectacle wearers aged 63 to 90 are **2x as likely to fall** as single-vision spectacle wearers.⁸

Multifocal spectacle wearers aged 62 to 80 are **significantly more likely to trip** compared to single-vision spectacles wearers.⁹

At age ≥ 65 **falls** are the **leading cause** of both fatal and non-fatal unintentional **injuries**, accounting for 40% of all injury-related deaths.¹⁰

Prevalence of astigmatism increases with age⁵



* Astigmatism defined as ≥ 1.0 D

Economic Burden



The reported economic **burden of spectacle** dependence after cataract surgery is estimated to range between **\$2,151 - \$3,440 in the US** and **\$1,786 - \$4,629 in Europe** over the remainder of life.²

The economic burden of astigmatism in cataract patients is mostly **driven by postoperative costs** of vision correction with spectacles and the associated indirect costs (doctor visits, travel, care givers' time).² Additionally, a linear relationship between astigmatism and cost has been reported, indicating correction of astigmatism with toric IOLs in patients with greater severity was more cost effective.²



Fall victims have an economic burden with a mean range of **\$2,044 to \$25,955 USD**.¹⁰ When considering all fall related costs, the burden range is **0.85% to 1.5% of the total health care expenditure** of countries in North American and Europe with estimates ranging from **\$50 billion (US) in 2015 to \$67.7 billion by 2020**.^{10,11,12}

The economic burden of fall victims cannot be ignored for the astigmatism patients with cataracts. Several studies have reported that the **size of an older adults visual field is strongly correlated with fall risk**, noting a higher association with the inferior region.¹³ Unfortunately, multifocal spectacles often restrict the visual field most notably in the inferior region when correcting for distance and near vision as needed for astigmatism patients.

Conclusion

Many patients with ≥ 1.00 D of astigmatism are not being treated with a toric IOL during cataract surgery. Yet, the data underscores the importance of considering the humanistic and economic burden of astigmatism for patients with cataracts. Moreover, the **data suggest humanistic and economic burden relief may be gained with implantation of toric IOLs** or use of single-distance vision spectacles for patients with astigmatism.

Acknowledgements

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